SUBSISTENCE HARVESTS AND USES IN SEVEN GULF OF ALASKA COMMUNITIES IN THE SECOND YEAR FOLLOWING THE *EXXON VALDEZ* OIL SPILL

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ABSTRACT

The report summarizes some of the findings of research conducted by the Division of Subsistence of the Alaska Department of Fish and Game in 1991 on patterns of subsistence harvest and use of wild resources in seven communities whose harvest areas were affected by the *Exxon Valdez* oil spill. The study villages were Chenega Bay and Tatitlek in Prince William Sound; Nanwalek (English Bay) and Port Graham in Lower Cook Inlet; and Ouzinkie, Larsen Bay, and Karluk in the Kodiak Island Borough. Research conducted by the division in 1990 found that subsistence harvests had declined greatly in these communities in the first year after the spill compared to pre-spill averages. The goal of the research in 1991 was to collect comparable data for the second post-spill year to determine how subsistence harvests and uses had changed. In total, 221 of 263 year-round households (84.0 percent) in the seven villages were interviewed.

The per capita harvest of wild resources in Chenega Bay in the second year after the oil spill (April 1990 - March 1991) was 136.8 pounds useable weight, virtually unchanged from the 148.3 pounds for the first post-spill year (April 1989 - March 1990). Thus, subsistence harvests remained much below pre-spill levels (316.4 pounds per capita in 1984/85 and 375.1 pounds in 1985/86). The range of resources used per household increased slightly to 9.8 kinds, compared to 7.2 the year before (using values adjusted to match data collection methods used in earlier studies), but was still well below the 16.9 kinds used on average in *1984185* and the 20.6 types on average estimated for 1985/86. Overall, a smaller percentage of Chenega Bay's population engaged in subsistence activities in 1990/91 than in the year before.

The pattern was similar for the other Prince William Sound village, Tatitlek. The per capita harvest of wild foods in 1990/91 was 152.7 pounds, even lower than the 214.8 pounds per person estimated for the first post-spill year. These compare with 352.5 pounds per person in 1987/88 and 643.5 pounds per person in 1988/89. As in Chenega Bay, the range of resources used by Tatitlek households increased slightly over the year before, but was well below the two pre-spill estimates. Although 65.5 percent of Tatitlek's population engaged in subsistence activities in *1989190* (the first post-spill year), this dropped to 62.7 percent in 1990/91. In both Chenega Bay and Tatitlek, concerns about the possible oil contamination

of subsistence foods persisted; in addition, many respondents reported notable declines in certain resource populations, such as marine mammals, sea ducks, and octopus, all important subsistence foods.

In contrast, the subsistence harvests of the other five study communities increased in 1990/91 over those reported for the first post-spill year (1989). In Port Graham, the per capita harvest rose from 122.2 pounds in 1989 to 214.0 pounds in 1990/91. The latter almost matched the only comprehensive pre-spill estimate of 228.8 pounds per person for 1987. At Larsen Bay, there was a large increase from 212.0 pounds per person in 1989 to 344.5 pounds per person in 1990/91. The estimate for 1990/91 exceeds that for one pre-spill year (210.7 pounds for 1986), but is lower than the other available estimate (425.9 pounds in 1982/83). Karluk's 1990/91 per capita harvest of 401.6 pounds was also much higher than that of 1989 (254.9 pounds). The 1990/91 estimate was very similar to that of 1986 (385.2 pounds per person) but was still lower than the 1982/83 estimate (863.2 pounds).

Increases in subsistence harvests also occurred in Nanwalek and Ouzinkie, but they failed to match any pre-spill levels. At Nanwalek, the per capita harvest was 181.3 pounds in the second year after the spill, compared to 140.9 pounds during the first post-spill year (1989) and 284.7 pounds per person in 1987. Ouzinkie's per capita harvest more than doubled, from 88.9 pounds per person in 1989 to 205.2 pounds per person in 1990/91. Subsistence harvests at Ouzinkie averaged 376.1 pounds in 1982/83 and 404.8 pounds in 1986, however.

In the five Lower Cook Inlet and Kodiak Island study communities, the average number of subsistence resources used per household increased in 1990/91 compared to the first post-spill year. However, this average in Nanwalek, Port Graham, and Ouzinkie remained below that estimated before the spill. The percentage of the population engaging in subsistence activities in 1990/91 increased notably over the year before in Nanwalek, Port Graham, and Ouzinkie, and remained relatively high in Karluk and Larsen Bay. On the other hand, some households in all five of these villages continued to express fears about the safety of using some subsistence foods harvested in areas affected by the spill.

Households' own assessments of subsistence uses in 1990/91 were consistent with these findings. Most households in the Lower Cook Inlet (53 percent) and Kodiak Island Borough (52 percent) villages said that their uses were up over the year before. However, almost all the households in

Nanwalek and Port Graham (85.2 percent) and half of those in the Kodiak Island Borough (50.0 percent) said that their subsistence uses in the second year after the spill had remained below their pre-spill norms. In the Prince William Sound communities, 90.6 percent of the households said that their subsistence uses were even lower in 1990/91 than in the first post-spill year. Virtually every household in these communities (96.9 percent) also said that their subsistence uses overall remained below pre-spill levels.

The report concludes that increases in subsistence harvests in five of the study villages suggest a renewed confidence in using at least some subsistence foods. However, the continuing very low levels of harvest at Chenega Bay and Tatitlek, the continued below average harvests in Nanwalek and Ouzinkie, and the concerns of some households in all seven study villages about the safety of using some subsistence foods, suggest that the consequences of the *Exxon Valdez* oil spill remained a factor which affected the subsistence uses of many families in these communities through the second post-spill year.

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CHAPTER ONE: INTRODUCTION

PROJECT BACKGROUND

This report summarizes findings of a research project conducted by the Division of Subsistence, Alaska Department of Fish and Game (ADF&G), in seven predominantly Alaska Native villages whose subsistence harvest areas were affected by the *Exxon Valdez* oil spill of March 1989. The study communities were Chenega Bay and Tatitlek in Prince William Sound; Nanwalek (English Bay)[1] and Port Graham in Lower Cook Inlet; and Ouzinkie, Larsen Bay, and Karluk of the Kodiak Island Borough (Fig. 1; Table 1). The research was supported through a cooperative agreement between the ADF&G and the U.S. Fish and Wildlife Service.[2] A preliminary report with some of the findings from this research was completed in March 1992 (Fall 1992a; cf. Fall 1992b). This technical paper updates data from that earlier report and contains a more complete summary of the study findings.

The purpose of the project was to document levels of fish and wildlife harvests for home use for the period from April 1990 through March 1991, the second year following the *Exxon Valdez* spill. Research conducted by the division in 1990 found stark declines in levels of subsistence uses in ten Alaska Native villages in the spill area (Fall 1991; cf. Fall et al. 1995; Fall et al. 1996; Stanek forthcoming a; Mishler and Cohen forthcoming). The goal of the present research was to collect comparable data for a second year in order to determine if harvest levels had changed. In addition to resource use information, demographic and employment data were also collected.[3]

RESEARCH OBJECTIVES

Research objectives included the following for each household in the seven study communities:

1. Quantified data on levels of participation in subsistence uses and estimates of household harvests in numbers of animals or fish and in pounds useable weight for a 12-month study year running from April 1, 1990, through March 31, 1991;
2. Data on involvement in commercial fisheries during the study year, including quantities of resources removed from commercial catches for home use;
3. Updated household demographic information, including the following information for each household member: relationship to household head, age, ethnicity, birthplace, length of

[1] The English Bay village council voted to change the name of this community to Nanwalek, the original Alutiiq name, in 1990.
[2] U.S. Fish and Wildlife Service Agreement Number 14-16-0007-91-7721; **ADF&G** Agreement Number COOP-91-035.
[3] The division has continued its research on post-spill characteristics of subsistence uses in spill area communities. Summaries of findings for the third, fourth, and fifth post-spill years appear in Fall and Utermohle (1995). This continuing research delayed completion of this technical paper.

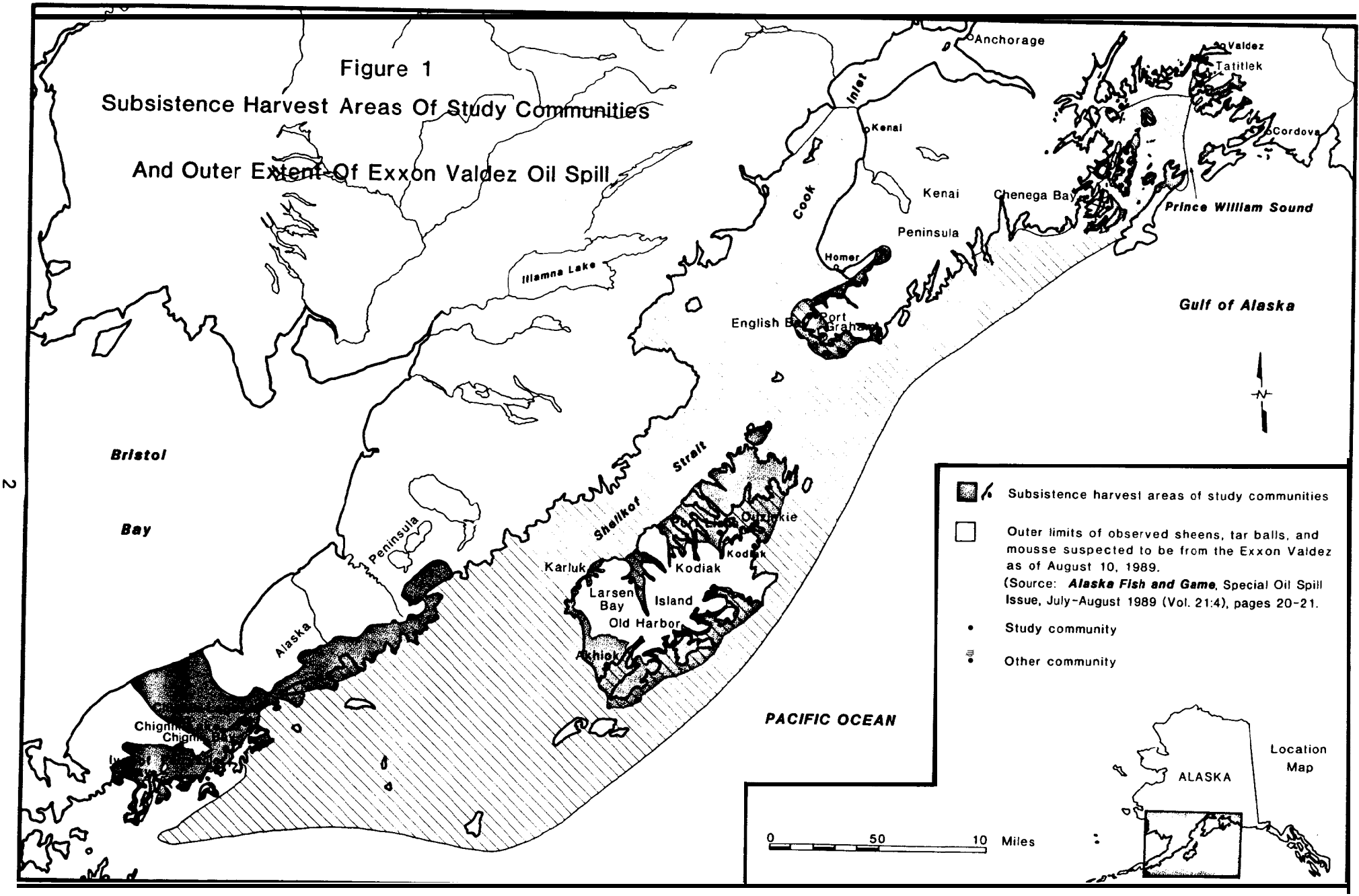


Figure 1
Subsistence Harvest Areas Of Study Communities
And Outer Extent Of Exxon Valdez Oil Spill
Anchorage
Valdez
Tatitlek
Cordova
Kenai
Cook Inlet
Kenai Peninsula
Chenega Bay
Prince William Sound
Homer
Iliamna Lake
English Bay
Port Graham
Gulf of Alaska
Bristol Bay
Shelikof Strait
Peninsula
Alaska
Karluk
Kodiak
Larsen Bay
Island
Old Harbor
Akhiok
Kodiak
PACIFIC OCEAN
Subsistence harvest areas of study communities
Outer limits of observed sheens, tar balls, and mousse suspected to be from the Exxon Valdez as of August 10, 1989.
(Source: Alaska Fish and Game, Special Oil Spill Issue, July-August 1989 (Vol. 21:4), pages 20-21.
Study community
Other community
0 50 100 Miles
ALASKA
Location Map

residency in the community, location of previous residence, months resided in the village during the study year, and level of formal education;

4. For each adult in the sample (age 16 and older), information on cash employment, including job type, employer type, months employed, hours worked per day and week, and amount earned, plus other sources of income;

TABLE 1. STUDY COMMUNITIES AND CENSUS POPULATIONS, 1990

Community	1990 Population	Percent Alaska Native
Chenega Bay	94	69.1%
Tatitlek	119	86.6%
English Bay	158	91.1%
Port Graham	166	90.4%
Ouzinkie	209	85.2%
Larsen Bay	147	84.4%
Karluk	71	91.5%

Source: Alaska Department of Labor 1991

5 Respondents' evaluations of use patterns for three subsistence harvest areas (specific to each village), including frequency of pre- and post-spill use, and reasons for changes in use patterns;[4]

6 Estimates of quantities of resources which were discarded because of perceived abnormalities, plus descriptions and respondents' explanations of these abnormalities; and

7. Each household's evaluation of its uses of each resource category and overall resource use for the study year in comparison with the previous year and with years before the spill, including reasons for any changes the household perceived. These evaluations are the source of most of the statements from respondents which appear in Chapter Three.

[4] Questions about use of particular harvest areas were included in subsequent household surveys in Chenega Bay and Tatitlek, and were summarized in Fall et al. (1994).

DATA GATHERING METHODS AND DATA ANALYSIS

Data were gathered through a systematic household survey using a standardized instrument which was administered in person in the homes of respondents or other convenient locations. The survey instrument (Appendix A) was modeled upon others used by the division, particularly the form used during the 1990 research in these same communities. Participation in the survey on the part of each household was voluntary. Prior to the field work, approval of the project was obtained from each community's government. All of the interviews occurred in April and May 1991. Project staff included:

Chenega Bay: Lee Stratton, Rita Miraglia
Tatitlek: Lee Stratton, Rita Miraglia
Nanwalek: Ronald Stanek, Rachel Mason, Bill Simeone[5]; John P. Moonin, village assistant
Port Graham: Ronald Stanek, Rachel Mason, Rita Miraglia, Bill Simeone; Anna Marie Meganack, village assistant
Ouzinkie: Craig Mishler, Janet Cohen, Deborah Robinson; Tamara Squartsoff, village assistant
Larsen Bay: Craig Mishler, Deborah Robinson; Sheila Theriault, village assistant
Karluk: Craig Mishler; Sheila Theriault, village assistant

Data management staff included Charles Utermohle, Louis Brown, Gretchen Jennings, and Sandy Skaggs. James Fall, Regional Program Manager, was responsible for overall project design and coordination, and wrote most of this report.

As in 1990, the goal of the research in 1991 was to interview knowledgeable representatives of each year-round household in the smaller communities of Chenega Bay, Tatitlek, Nanwalek, Port Graham, Larsen Bay, and Karluk. For Ouzinkie, the original goal was to re-interview the 35 randomly selected households that had been part of the 1990 sample. However, because only 29 of these 35 household remained in the community in 1991, and because there was available time and staff, the decision was made to attempt to interview all the rest of the households in Ouzinkie as well.

Table 2 summarizes sample achievement for the 1991 survey. It also compares the 1991 sample with that of 1990. In Chenega Bay, 18 of the 21 households (85.7 percent) were interviewed. This included 14 of the 18 households that had been part of the 1990 sample, for a re-interview rate of 77.8 percent. In Tatitlek, 17 of 28 year-round households (60.7 percent) were surveyed in 1991, including 12 of the 22 that had been interviewed in 1990 (54.5 percent). At Nanwalek, the 1991 sample included 35 of

[5] Employee of Stephen R. Braund and Associates, Anchorage. This anthropological research firm had been hired by attorneys working on litigation related to the oil spill on behalf of the Alaska Native Class. The firm asked that Simeone participate in some of the interviews in Nanwalek and Port Graham to become familiar with division research methods. The firm covered all the costs of Simeone's participation. The results of the surveys conducted by Simeone remained confidential, and no information from these surveys not otherwise available to qualified researchers was released to Braund and Associates or the attorneys for the Alaska Native Class.

Table 2. Sample Achievement, Division of Subsistence Household Survey, 1991

Community	Restudy Year (interviewed in 1991)					First Year Sample (interviewed in 1990)					
	Number of Households				Percentage	Number of Households					Percentage
	Target	Interviewed	Refusals	No Contact	Interviewed	Interviewed	Reinterviewed	Refusals	No Contact	Moved	Re-Interviewed
Chenega Bay	21	18	0	3	85.7%	18	14	0	3	1	77.8%
Tatitlek	28	17	6	5	60.7%	22	12	2	5	3	54.5%
Nanwalek	41	35	1	5	85.4%	33	28	1	2	2	84.8%
Port Graham	55	46	2	7	83.6%	48(46)[2]	40	0	3	3	83.3%
Karluk	19	17	1	1	89.5%	14	12	0	0	2	85.7%
Larsen Bay	40	35	5	0	87.5%	34(33)[3]	25	3	0	4	73.5%
Ouzinkie	59	53	3	3	89.8%	35	27	1	1	5[4]	77.1%
Ouzinkie A[1]	29	27	1	1	93.1%	35	27	1	1	5[4]	77.1%
Ouzinkie B[1]	30	26	2	2	86.7%	NA	NA	NA	NA	NA	NA
Totals	263	221	18	24	84.0%	204	158	7	14	20	77.5%[5]

[1] Ouzinkie A represents the 1990 random sample. Ouzinkie B is the remainder of the village households which were interviewed in 1991.

[2] Of the 48 interviewed households, two had merged with two others in 1990. Thus, 46 separate households remained. Members of the merged households were included in the 1990 sample. Therefore, 42 of the original 48 households were covered in the 40 interviews.

[3] In Larsen Bay, a death eliminated a household. Another death occured in a second household, and the survivor moved in with another family which was interviewed. Thus a maximum of 32 households could have been reinterviewed. Thus, 26 of the original 34 households were covered in the 25 interviews.

[4] Also, a death occurred which eliminated one household.

[5] Total of households reinterviewed, refusals, no contact, and moved does not equal 204 because of two households merged with others in Port Graham, a death and a household merger in Larsen Bay, and a death in Ouzinkie.

the 41 households (85.4 percent). Of the 33 households that were part of the 1990 sample, 28 were surveyed again (84.8 percent). Survey achievement was similar in Port Graham; 46 of 55 households were interviewed in 1991 (83.6 percent), including 40 of the 48 households in the 1990 sample (83.3 percent). The Karluk sample contained 17 households in 1991, 89.5 percent of the 19 year-round households in the village. This included 12 of the 14 households included in the 1990 study (85.7 percent). At Larsen Bay, 35 of 40 households (87.5 percent) were interviewed in 1991, including 25 of the 34 surveyed in 1990 (73.5 percent). At Ouzinkie, 27 of the 35 households randomly selected to be part of the 1990 study were re-interviewed in 1991 (77.1 percent). In addition, 26 of the other 30 households were surveyed in 1991 (86.7 percent). In total, the 1991 Ouzinkie sample included 53 of the 59 households present in April 1991 (89.8 percent).

In total, the sample in the seven communities contained 221 of the 263 year-round households, an achievement rate of 84.0 percent. Of those households not interviewed, 24 (9.1 percent) were unavailable for interviewing (generally because they were out of town while the research was occurring), and 18 (6.8 percent) declined to participate in the survey. Of the 204 households interviewed in these seven villages in 1990, 158 (77.5 percent) were re-interviewed in 1991. Of the remainder, 20 had moved from their village, 14 were not available for interviewing, and 7 declined to be interviewed a second time (Table 2). As shown in Table 3, the average length of the interviews was 1.06 hours (about 64 minutes).

Table 3. Length of Household Interviews, 1991

Community	Length of Interviews in Hours		
	Mean	Minimum	Maximum
Chenega Bay	0.75	0.25	1.50
Karluk	1.20	0.75	2.50
Larsen Bay	1.16	0.50	2.50
Nanwalek	1.17	0.58	1.75
Ouzinkie	0.96	0.33	2.50
Port Graham	1.15	0.42	2.50
Tatitlek	0.84	0.33	1.50
All Communities	1.06	0.25	2.50

Following the field work, the data were coded by the field researchers for computer entry and analysis. After several rounds of review for accuracy of entry and logical consistency, the data were analyzed using the Statistical Package for the Social Sciences (SPSS) package. Harvest quantities in numbers of animals or fish (or other reporting units such as gallons or buckets) were converted to pounds

useable weight using standard factors (Appendix B).[6] These data are also part of the division's Community Profile Database (CPDB) (Scott et al. 1997).

THE AFTERMATH OF THE SPILL IN THE SECOND YEAR

Efforts to clean beaches fouled by the spill oil continued at a reduced level in the spring and summary of 1990, the second post-spill year. For example, in March and April 1990, as part of a local response program, over 150 people from Kodiak Island, Prince William Sound, and the Alaska Peninsula picked up 128,000 pounds of oily waste (Piper 1993:133). State and federal on-scene coordinators did not declare the oil spill clean-up over until June 12, 1992 (Piper 1993:146). However, limited, site-specific efforts to remove remaining surface and subsurface oil took place after this official end to the clean-up efforts. For example, as part of an oil spill restoration project in 1994, residents of Chenega Bay assisted in cleaning oiled mussel beds in western Prince William Sound. In short, the spill and its effects remained an important issue throughout and beyond the second post-spill year. (For detailed overviews of spill response and clean-up efforts, see Piper 1993 and United States Coast Guard 1993.)

Programs to collect and test subsistence resources in response to concerns voiced by subsistence users about the safety of using traditional foods from the oil spill area continued in 1990 and 1991. The Oil Spill Health Task Force (OSHTF) met regularly throughout 1990 to evaluate the results of this collection and testing program. An expert committee of toxicologists met in February 1990 to review the results of tests on samples of subsistence resources collected in 1989 (Walker and Field 1991, Fall and Field 1996). The Task Force communicated food safety advice based on these evaluations through newsletters, public meetings, and a video. At the time of the spill, no federal Food and Drug Administration (FDA) guidelines were available regarding the safety of using wild resources contaminated with polycyclic aromatic hydrocarbons (PAHs). In late summer 1990, the FDA released an advisory opinion and report, which the OSHTF reviewed and communicated to the communities in the spill area. The FDA concluded that the risk of contracting cancer associated with consuming salmon and other finfish from the spill area was so low that in practical terms it was equal to zero. The cancer risk from eating shellfish from even the most contaminated site included in the study (Windy Bay) was extremely low (Bolger et al. 1996). The OSHTF continued to advise that while the cancer risk was low, people should avoid using shellfish from beaches with oil on the surface or subsurface. Also in 1990, the results of tests on samples of ducks, marine mammals, and deer became available for the first time. PAH levels in all the samples were low, although levels in the blubber of visibly oiled seals were elevated. Health experts deemed all these resources safe to eat (ADF&G 1990b).

[6] It should be noted that the 1989 conversion factors for salmon from Prince William Sound were used in the preliminary report (Fall 1992a), rather than factors based on the 1990 round weights of commercially-harvested salmon in the sound. This was due to the unavailability of the 1990 data in time to meet the schedule for the preliminary report, as specified in the cooperative agreement.

CHAPTER TWO: COMMUNITY DEMOGRAPHY AND CASH EMPLOYMENT

DEMOGRAPHY

The following section describes some demographic characteristics of the seven study communities based upon the household interviews conducted in April and May 1991. Some comparisons with the findings of the division's 1990 research in these communities are made. Table 1 (see Chapter One) reports study community populations in 1990 based upon the U.S. Census. In some cases, the census figures differ from division estimates. A likely explanation for the differences is that the division included only year-round households and residents in its survey, while the federal census may have counted temporary or part-time residents as well.

Chenega Bay

As shown in Table 4, division researchers identified 21 year-round households in Chenega Bay at the time of the survey in April 1991. Based on interviews with 18 of these households (85.7 percent), the estimated total community population was 77. This compares to a total of 21 households with 74 residents in April 1990 (Fig. 2). Of the 18 households interviewed in the previous study, one had moved from the community at the time of the present research. In 1990/91, 78.8 percent of the study population was Alaska Native, slightly lower than 85.7 percent recorded the year before (Fig. 3). Figure 4 and Table 5 provide a profile of Chenega Bay's population in the 1990/91 study year.

Tatitlek

According to division research, there were 28 year-round households with 124 members in Tatitlek in April 1991 (Table 4). This compares with 111 people in 28 households the year before (Fig. 2). Of the 22 households that had been interviewed in 1990, three had left the community by the time of the 1990-91 study (Table 2). According to the survey results, Tatitlek's population was 93.3 percent Alaska Native in 1990/91, compared to 86.2 percent the year before (Fig. 3). Figure 5 and Table 6 provide a profile of Tatitlek's population in the 1990/91 study year.

Nanwalek

Division researchers identified 41 year-round households in Nanwalek in April 1991 with an estimated total population of 184 (Table 4). The overall number of households in this community did not change from the year before, although two of the 33 households that had been interviewed in 1990 left Nanwalek in the following year. The estimated community population at the time of the earlier round of post-spill interviews was 157 (Fig. 2). The vast majority Nanwalek's population was Alaska Native in both

Table 4. Demographic Characteristics of Households, Study Communities, 1990/91

Characteristics	Chenega Bay	Tatitlek	Nanwalek	Port Graham	Karluk	Larsen Bay	Ouzinkie
Sampled Households	18.00	17.00	35.00	46.00	17.00	35.00	53.00
Number of Households in the Community	21.00	28.00	41.oo	55.00	19.00	40.00	59.00
Percentage of Households Sampled	85.71%	60.71%	85.37%	83.64%	89.47%	87.50%	89.834
Household Size							
Mean	3.67	4.41	4.49	2.98	4.35	3.63	3.43
Minimum	1.oo	2.00	1.00	1.00	1.00	1.00	1.00
Maximum	6.00	7.00	9.00	7.00	9.00	7.00	9.00
Sample Population	66.00	75.00	157.00	137.00	74.00	127.00	182.00
Estimated Community Population	77.00	123.53	183.91	163.80	82.71	145.14	202.80
Age (Years)							
Mean	29.37	25.30	22.63	30.37	22.08	26.37	29.63
Minimum	2.03	1.41	0.01	0.12	0.07	0.55	0.05
Maximum	67.64	68.51	76.51	77.72	82.85	78.70	96.75
Median	27.74	20.55	18.31	31.10	17.18	21.58	27.06
Length of Residency - Population (years)							
Mean	5.55	14.39	16.32	22.00	16.69	13.59	25.72
Minimum	0.63	0.13	0.01	0.12	0.07	0.55	0.05
Maximum	9.13	62.42	66.37	68.96	71.19	66.91	84.53
Length of Residency - Household Heads							
Mean	6.03	22.26	27.13	31.13	25.82	18.90	25.72
Minimum	0.63	0.63	0.13	5.13	0.63	0.63	0.63
Maximum	9.13	62.42	66.37	68.96	71.19	66.91	84.53
Sex							
Males							
Number	33.83	62.59	97.23	90.87	51.41	80.00	102.42
Percentage	43.94%	50.67%	52.87%	55.47%	62.16%	55.12%	50.550,
Females							
Number	43.17	60.94	86.69	72.93	31.29	65.14	100.19
Percentage	56.06%	49.33%	47.13%	44.53%	37.84%	44.88%	49.450,
Alaska Native Households (Either Head)							
Number	17.50	26.35	41.00	55.00	17.88	35.43	53.43
Percentage	83.33%	94.12%	100.00%	100.00%	94.12%	88.57%	90.57%
Estimated Population							
Number	60.67	115.29	172.20	151.85	78.24	122.29	170.32
Percentage	78.79%	93.33%	93.63%	92.70%	94.59%	84.25%	84.075

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991.

Figure 2. Population of Study Communities, 1989/90 and 1990/91

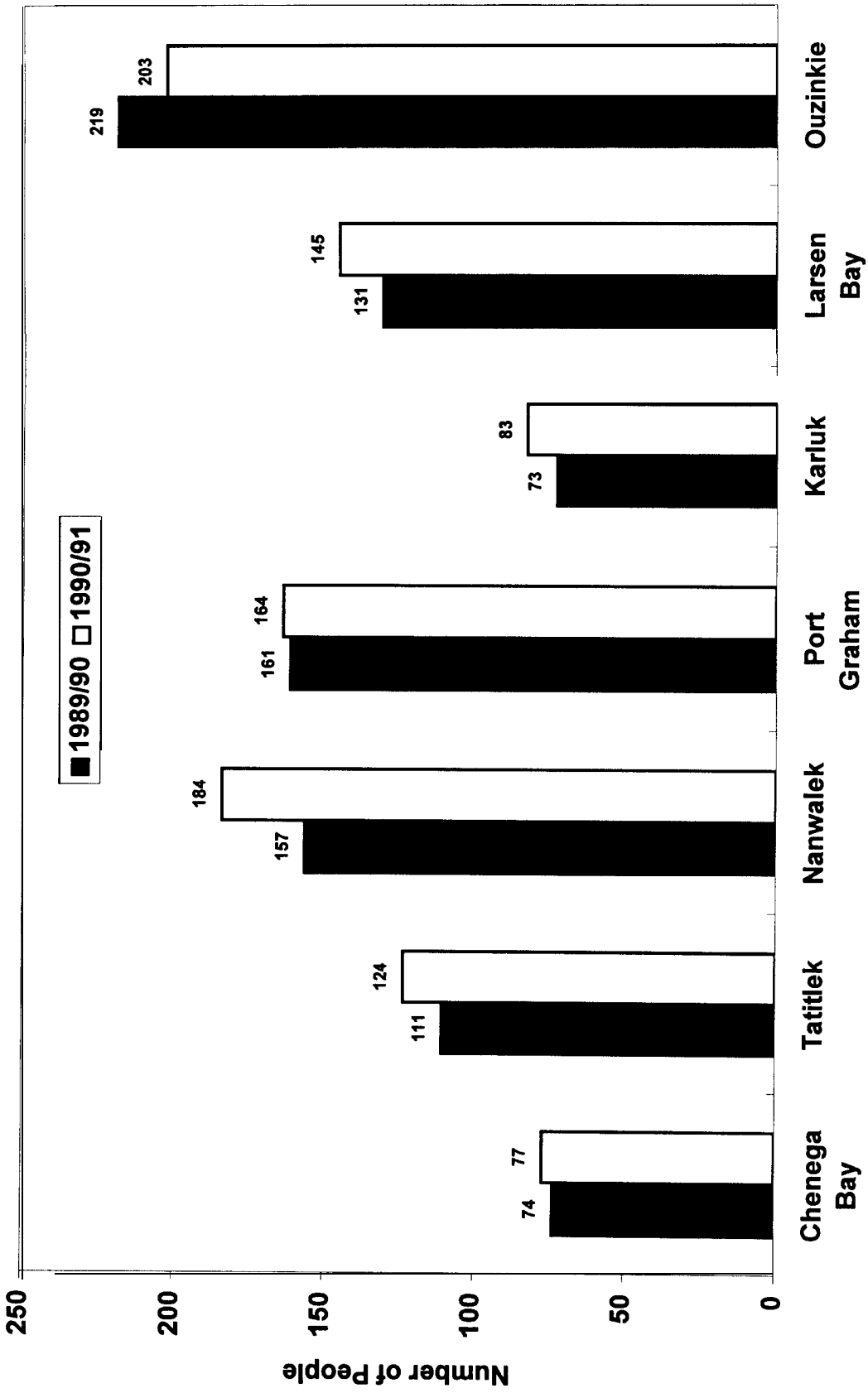


Figure 3. Changes in Alaska Native Population of Study Communities, 1989190 and 1990191

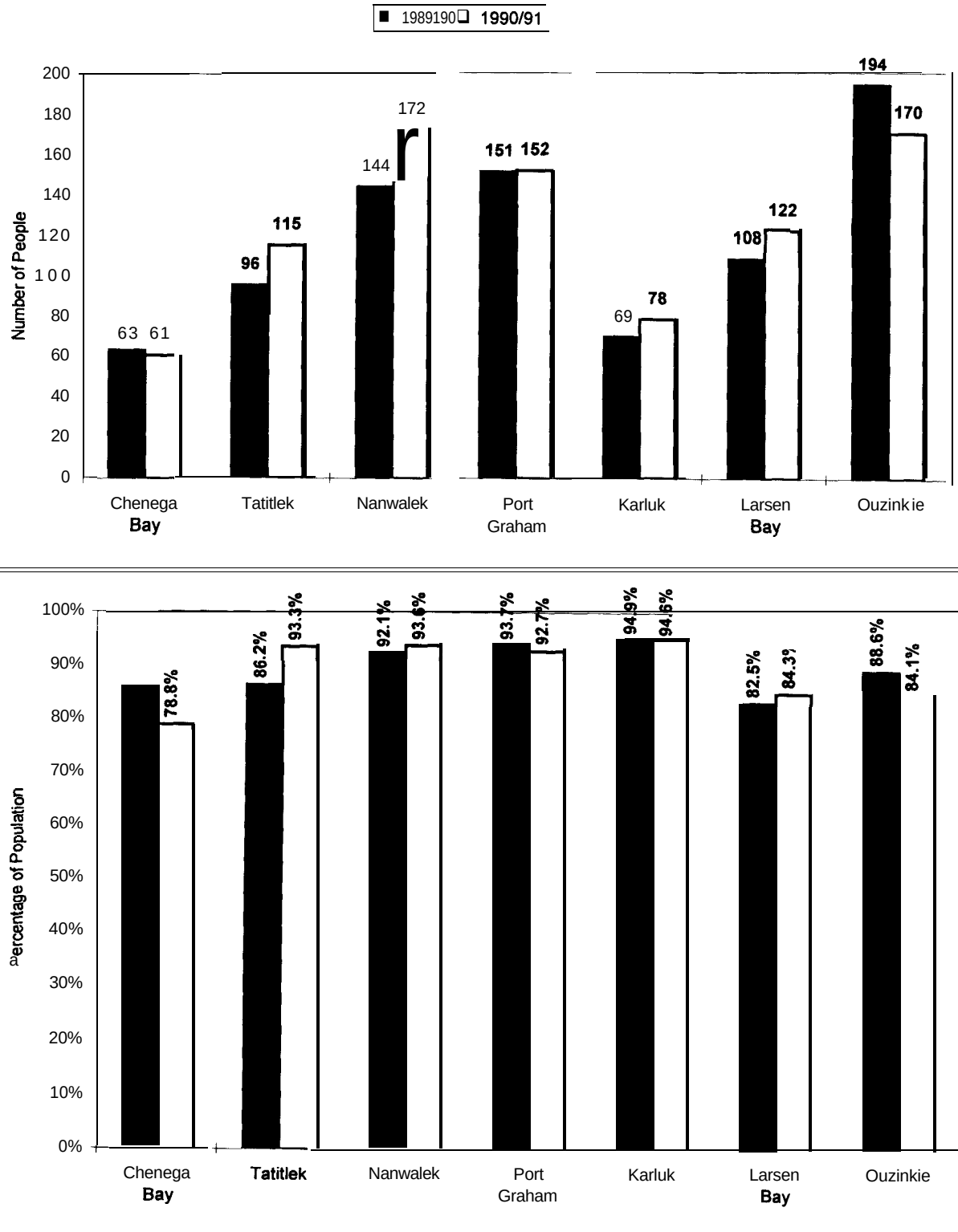
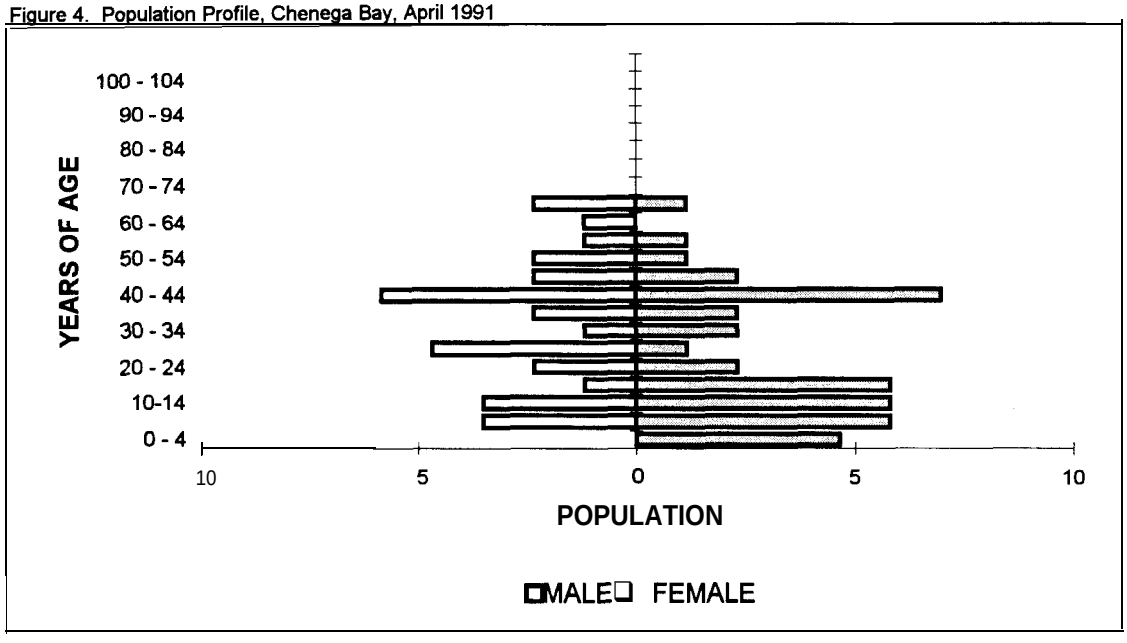


Figure 4. Population Profile, Chenega Bay, April 1991

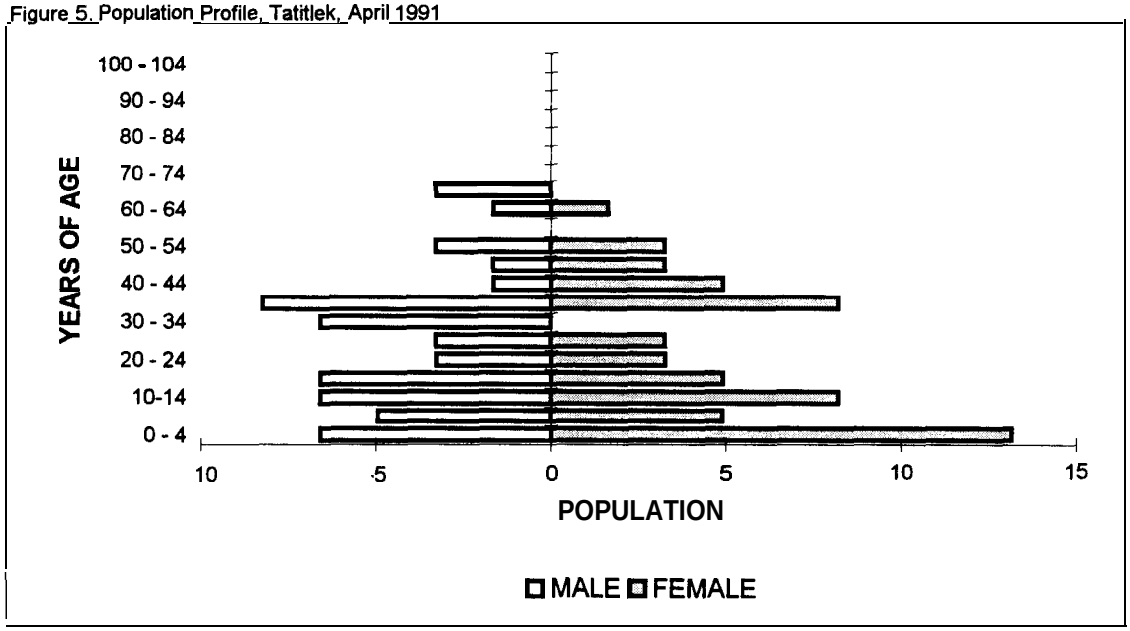


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table 5. Population Profile, Chenega Bay, April 1991

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	0.00	0.00%	0.00%	4.67	10.81%	10.81%	4.67	6.06%	6.06%
5-9	3.50	10.34%	10.34%	5.83	13.51%	24.32%	9.33	12.12%	18.18%
10-14	3.50	10.34%	20.69%	5.83	13.51%	37.84%	9.33	12.12%	30.30%
15 - 19	1.17	3.45%	24.14%	5.83	13.51%	51.35%	7.00	9.09%	39.39%
20 - 24	2.33	6.90%	31.03%	2.33	5.41%	56.76%	4.67	6.06%	45.45%
25 - 29	4.67	13.79%	44.83%	1.17	2.70%	59.46%	5.83	7.58%	53.03%
30 - 34	1.17	3.45%	48.28%	2.33	5.41%	64.86%	3.50	4.55%	57.58%
35 - 39	2.33	6.90%	55.17%	2.33	5.41%	70.27%	4.67	6.06%	63.64%
40 - 44	5.83	17.24%	72.41%	7.00	16.22%	86.49%	12.83	16.67%	80.30%
45 - 49	2.33	6.90%	79.31%	2.33	5.41%	91.89%	4.67	6.06%	86.36%
50 - 54	2.33	6.90%	86.21%	1.17	2.70%	94.59%	3.50	4.55%	90.91%
55 - 59	1.17	3.45%	89.66%	1.17	2.70%	97.30%	2.33	3.03%	93.94%
60 - 64	1.17	3.45%	93.10%	0.00	0.00%	97.30%	1.17	1.52%	95.45%
65 - 69	2.33	6.90%	100.00%	1.17	2.70%	100.00%	3.50	4.55%	100.00%
70 - 74	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
75 - 79	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
80 - 84	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
00 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	33.83	43.94%		43.17	56.06%		77.00	100.00%	

Figure 5. Population Profile, Tatitlek, April 1991



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table 6. Population Profile, Tatitlek, April 1991

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	6.59	10.53%	10.53%	13.18	21.62%	21.62%	19.76	16.00%	16.00%
5-9	4.94	7.89%	18.42%	4.94	8.11%	29.73%	9.88	8.00%	24.00%
10-14	6.59	10.53%	28.95%	8.24	13.51%	43.24%	14.82	12.00%	36.00%
15 - 19	6.59	10.53%	39.47%	4.94	8.11%	51.35%	11.53	9.33%	45.33%
20 - 24	3.29	5.26%	44.74%	3.29	5.41%	56.76%	6.59	5.33%	50.67%
25 - 29	3.29	5.26%	50.00%	3.29	5.41%	62.16%	6.59	5.33%	56.00%
30 - 34	6.59	10.53%	60.53%	0.00	0.00%	62.16%	6.59	5.33%	61.33%
35 - 39	8.24	13.16%	73.68%	8.24	13.51%	75.68%	16.47	13.33%	74.67%
40 - 44	1.65	2.63%	76.32%	4.94	8.11%	83.78%	6.59	5.33%	80.00%
45 - 49	1.65	2.63%	78.95%	3.29	5.41%	89.19%	4.94	4.00%	84.00%
50 - 54	3.29	5.26%	84.21%	3.29	5.41%	94.59%	6.59	5.33%	89.33%
55 - 59	0.00	0.00%	84.21%	0.00	0.00%	94.59%	0.00	0.00%	89.33%
60 - 64	1.65	2.63%	86.84%	1.65	2.70%	97.30%	3.29	2.67%	92.00%
65 - 69	3.29	5.26%	92.11%	0.00	0.00%	97.30%	3.29	2.67%	94.67%
70 - 74	0.00	0.00%	92.11%	0.00	0.00%	97.30%	0.00	0.00%	94.67%
75 - 79	0.00	0.00%	92.11%	0.00	0.00%	97.30%	0.00	0.00%	94.67%
80 - 84	0.00	0.00%	92.11%	0.00	0.00%	97.30%	0.00	0.00%	94.67%
85 - 89	0.00	0.00%	92.11%	0.00	0.00%	97.30%	0.00	0.00%	94.67%
90 - 94	0.00	0.00%	92.11%	0.00	0.00%	97.30%	0.00	0.00%	94.67%
95 - 99	0.00	0.00%	92.11%	0.00	0.00%	97.30%	0.00	0.00%	94.67%
100 - 104	0.00	0.00%	92.11%	0.00	0.00%	97.30%	0.00	0.00%	94.67%
Missing	4.94	7.89%	100.00%	1.65	2.70%	100.00%	6.59	5.33%	100.00%
TOTAL	62.59	50.67%		60.94	49.33%		123.53	100.00%	

post-spill study years, 93.6 percent in 1990-91 and 92.1 percent the year before (Fig. 3). Figure 6 and Table 7 provide a profile of Nanwalek's population in the 1990/91 study year.

Port Graham

There were 55 year-round households in Port Graham at the time of the division research in April 1991 (Table 4), down from 61 the year before. Of the 48 households that had been interviewed in 1990, three had moved away from Port Graham by the time the next round of surveys occurred (Table 2). Based upon the household interviews, the estimated population of Port Graham in April 1991 was 164, 92.7 percent of whom were Alaska Natives. This compares with 161 people, and 93.7 percent Alaska Native in the year before (Fig. 2, Fig. 3). Figure 7 and Table 8 provide a profile of Port Graham's population in the 1990/91 study year.

Ouzinkie

As reported in Table 4, division researchers identified 59 year-round households in Ouzinkie in April 1991. The estimated population of these households was 202. Overall, 84.1 percent of Ouzinkie's population was Alaska Native during the study year. For the previous year, the division identified 69 year-round households with 219 people and an ethnic composition of 85.4 percent Alaska Native (Fig. 2, Fig. 3). Of the 35 households randomly selected for interviews in 1990, five moved from the community during the 1990/91 study year (Table 2). This was the largest number and percentage of any of the seven study communities. Figure 8 and Table 9 provide a population provide of Ouzinkie for the 1990/91 study year.

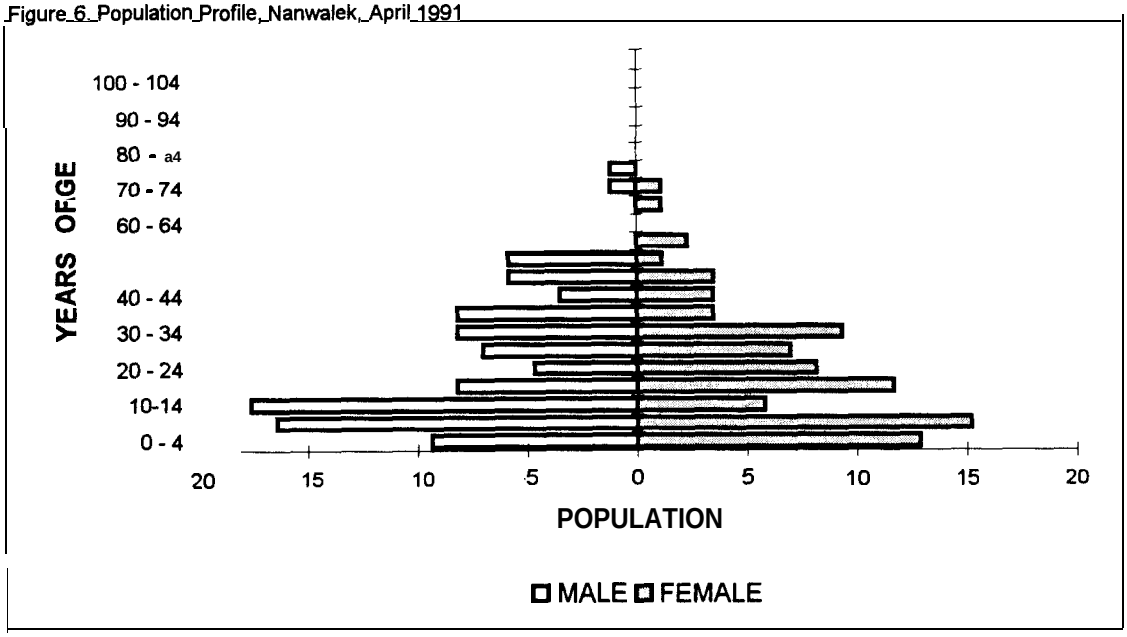
Larsen Bay

There were 40 year-round households living in Larsen Bay in April 1991, with an estimated population of 146. Most (84.4 percent) of this population was Alaska Native (Table 4). Overall, there was not a great deal of demographic change in this community compared to the year before, when the division identified 39 year-round households with 132 people, 82.6 percent of whom were Alaska Native (Fig. 2, Fig. 3). A relatively large number of the 34 households that had been interviewed in 1990, four, had moved from the community by the time of the 1991 research (Table 2). Figure 9 and Table 10 provide a provide of Larsen Bay's population in the 1990/91 study year.

Karluk

As shown in Table 4, according to division research there were 19 households with 84 people in Karluk in April 1991, of whom 94.7 percent were Alaska Native. In 1990, the division identified 17 year round households in this community with 74 people (Fig. 2). The ethnic composition for the previous year was 93.4 percent Alaska Native (Fig. 3). Two of the 14 households interviewed in 1990 left the community

Figure 6. Population Profile, Nanwalek, April 1991

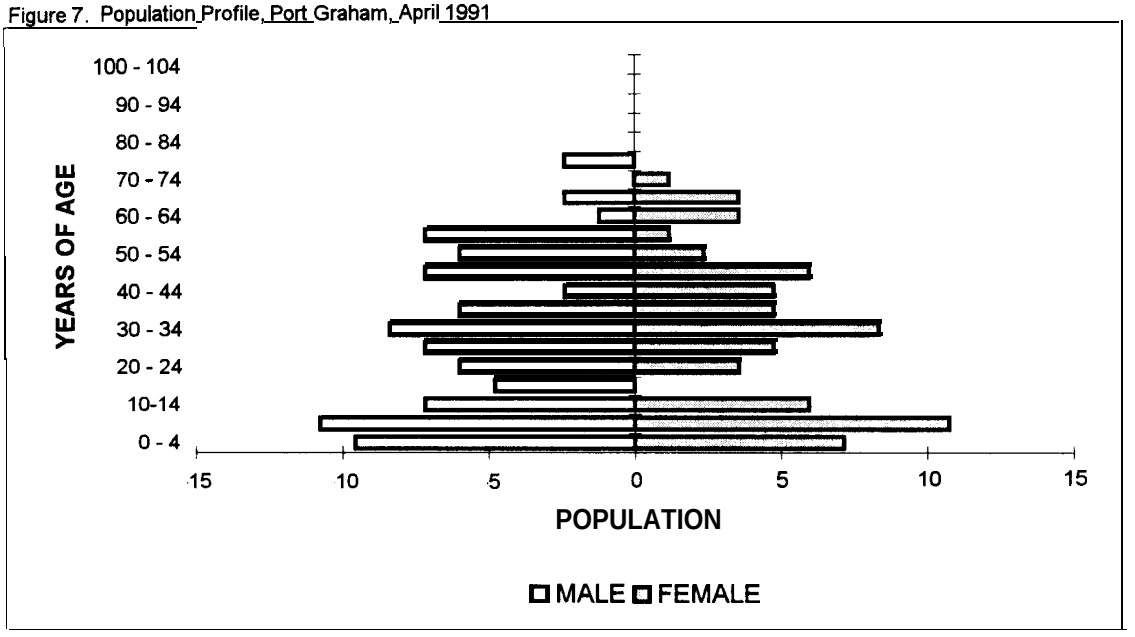


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table 7. Population Profile, Nanwalek, April 1991

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	9.37	9.64%	9.64%	12.89	14.86%	14.86%	22.26	12.10%	12.10%
5-9	16.40	16.87%	26.51%	15.23	17.57%	32.43%	31.63	17.20%	29.30%
10-14	17.57	18.07%	44.58%	5.86	6.76%	39.19%	23.43	12.74%	42.04%
15 - 19	8.20	8.43%	53.01%	11.71	13.51%	52.70%	19.91	10.83%	52.87%
20 - 24	4.69	4.82%	57.83%	8.20	9.46%	62.16%	12.89	7.01%	59.87%
25 - 29	7.03	7.23%	65.06%	7.03	8.11%	70.27%	14.06	7.64%	67.52%
30 - 34	8.20	8.43%	73.49%	9.37	10.81%	81.08%	17.57	9.55%	77.07%
35 - 39	8.20	8.43%	81.93%	3.51	4.05%	85.14%	11.71	6.37%	83.44%
40 - 44	3.51	3.61%	85.54%	3.51	4.05%	89.19%	7.03	3.82%	87.26%
45 - 49	5.86	6.02%	91.57%	3.51	4.05%	93.24%	9.37	5.10%	92.36%
50 - 54	5.86	6.02%	97.59%	1.17	1.35%	94.59%	7.03	3.82%	96.18%
55 - 59	0.00	0.00%	97.59%	2.34	2.70%	97.30%	2.34	1.27%	97.45%
60 - 64	0.00	0.00%	97.59%	0.00	0.00%	97.30%	0.00	0.00%	97.45%
65 - 69	0.00	0.00%	97.59%	1.17	1.35%	98.65%	1.17	0.64%	98.09%
70 - 74	1.17	1.20%	98.80%	1.17	1.35%	1 00.00%	2.34	1.27%	99.36%
75 - 79	1.17	1.20%	100.00%	0.00	0.00%	100.00%	1.17	0.64%	100.00%
80 - 84	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	97.23	52.87%		86.69	47.13%		183.91	100.00%	

Figure 7. Population Profile, Port Graham, April 1991

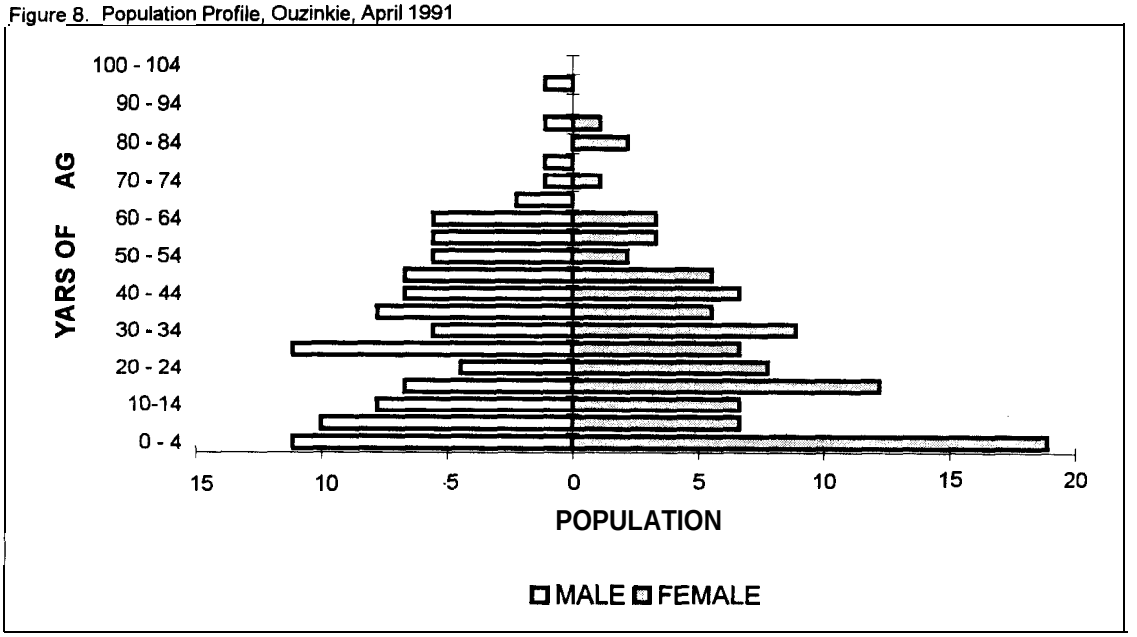


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table 8. Population Profile, Port Graham, April 1991

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	9.57	10.53%	10.53%	7.17	9.84%	9.84%	16.74	10.22%	10.22%
5-9	10.76	11.84%	22.37%	10.76	14.75%	24.59%	21.52	13.14%	23.36%
10-14	7.17	7.89%	30.26%	5.98	8.20%	32.79%	13.15	8.03%	31.39%
15 - 19	4.78	5.26%	35.53%	0.00	0.00%	32.79%	4.78	2.92%	34.31%
20 - 24	5.98	6.58%	42.11%	3.59	4.92%	37.70%	9.57	5.84%	40.15%
25 - 29	7.17	7.89%	50.00%	4.78	6.56%	44.26%	11.96	7.30%	47.45%
30 - 34	8.37	9.21%	59.21%	8.37	11.48%	55.74%	16.74	10.22%	57.66%
35 - 39	5.98	6.58%	65.79%	4.78	6.56%	62.30%	10.76	6.57%	64.23%
40 - 44	2.39	2.63%	68.42%	4.78	6.56%	68.85%	7.17	4.38%	68.61%
45 - 49	7.17	7.89%	76.32%	5.98	8.20%	77.05%	13.15	8.03%	76.64%
50 - 54	5.98	6.58%	82.89%	2.39	3.28%	80.33%	8.37	5.11%	81.75%
55 - 59	7.17	7.89%	90.79%	1.20	1.64%	81.97%	8.37	5.11%	86.86%
60 - 64	1.20	1.32%	92.11%	3.59	4.92%	86.89%	4.78	2.92%	89.78%
65 - 69	2.39	2.63%	94.74%	3.59	4.92%	91.80%	5.98	3.65%	93.43%
70 - 74	0.00	0.00%	94.74%	1.20	1.64%	93.44%	1.20	0.73%	94.16%
75 - 79	2.39	2.63%	97.37%	0.00	0.00%	93.44%	2.39	1.46%	95.62%
80 - 84	0.00	0.00%	97.37%	0.00	0.00%	93.44%	0.00	0.00%	95.62%
85 - 89	0.00	0.00%	97.37%	0.00	0.00%	93.44%	0.00	0.00%	95.62%
90 - 94	0.00	0.00%	97.37%	0.00	0.00%	93.44%	0.00	0.00%	95.62%
95 - 99	0.00	0.00%	97.37%	0.00	0.00%	93.44%	0.00	0.00%	95.62%
100 - 104	0.00	0.00%	97.37%	0.00	0.00%	93.44%	0.00	0.00%	95.62%
Missing	2.39	2.63%	100.00%	4.78	6.56%	100.00%	7.17	4.38%	100.00%
TOTAL	90.87	55.47%		72.93	44.53%		163.80	100.00%	

Figure 8. Population Profile, Ouzinkie, April 1991

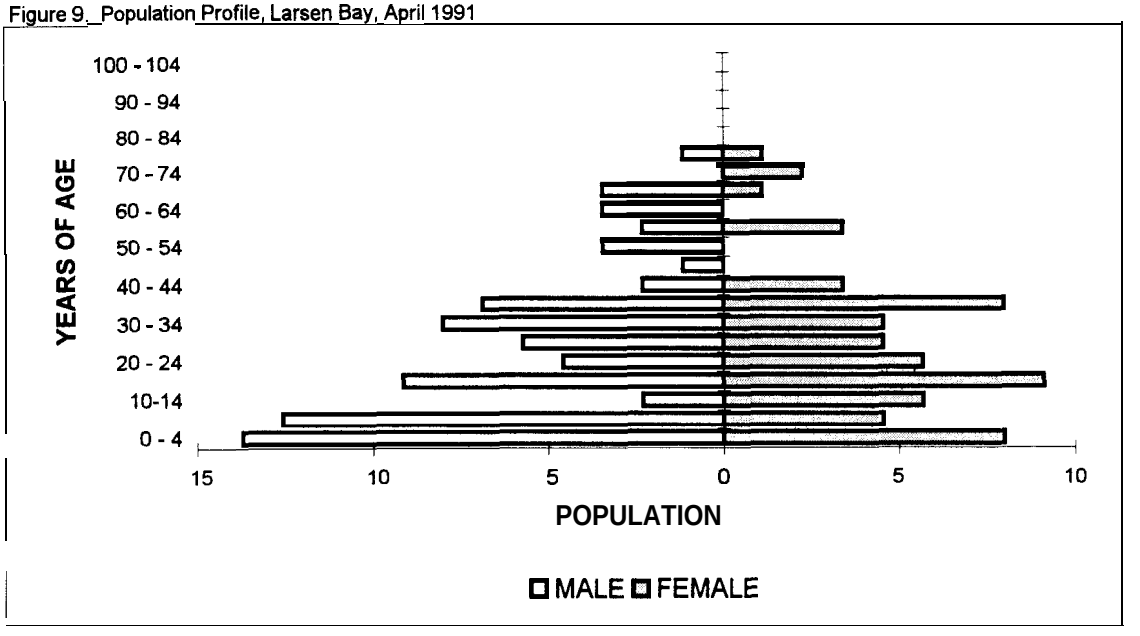


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table 9. Population Profile, Ouzinkie, April 1991

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	11.13	10.87%	10.87%	18.92	18.89%	18.89%	30.06	14.84%	14.84%
5-9	10.02	9.78%	20.65%	6.68	6.67%	25.56%	16.70	8.24%	23.08%
10-14	7.79	7.61%	28.26%	6.68	6.67%	32.22%	14.47	7.14%	30.22%
15 - 19	6.68	6.52%	34.78%	12.25	12.22%	44.44%	18.92	9.34%	39.56%
20 - 24	4.45	4.35%	39.13%	7.79	7.78%	52.22%	12.25	6.04%	45.60%
25 - 29	11.13	10.87%	50.00%	6.68	6.67%	58.89%	17.81	8.79%	54.40%
30 - 34	5.57	5.43%	55.43%	8.91	8.89%	67.78%	14.47	7.14%	61.54%
35 - 39	7.79	7.61%	63.04%	5.57	5.56%	73.33%	13.36	6.59%	68.13%
40 - 44	6.68	6.52%	69.57%	6.68	6.67%	80.00%	13.36	6.59%	74.73%
45 - 49	6.68	6.52%	76.09%	5.57	5.56%	85.56%	12.25	6.04%	80.77%
50 - 54	5.57	5.43%	81.52%	2.23	2.22%	87.78%	7.79	3.85%	84.62%
55 - 59	5.57	5.43%	86.96%	3.34	3.33%	91.11%	8.91	4.40%	89.01%
60 - 64	5.57	5.43%	92.39%	3.34	3.33%	94.44%	8.91	4.40%	93.41%
65 - 69	2.23	2.17%	94.57%	0.00	0.00%	94.44%	2.23	1.10%	94.51%
70 - 74	1.11	1.09%	95.65%	1.11	1.11%	95.56%	2.23	1.10%	95.60%
75 - 79	1.11	1.09%	96.74%	0.00	0.00%	95.56%	1.11	0.55%	96.15%
80 - 84	0.00	0.00%	96.74%	2.23	2.22%	97.78%	2.23	1.10%	97.25%
85 - 89	1.11	1.09%	97.83%	1.11	1.11%	98.89%	2.23	1.10%	98.35%
90 - 94	0.00	0.00%	97.83%	0.00	0.00%	98.89%	0.00	0.00%	98.35%
95 - 99	1.11	1.09%	98.91%	0.00	0.00%	98.89%	1.11	0.55%	98.90%
100 - 104	0.00	0.00%	98.91%	0.00	0.00%	98.89%	0.00	0.00%	98.90%
Missing	1.11	1.09%	100.00%	1.11	1.11%	100.00%	2.23	1.10%	100.00%
TOTAL	102.42	50.55%		100.19	49.45%		202.60	100.00%	

Figure 9. Population Profile, Larsen Bay, April 1991



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table 10. Population Profile, Larsen Bay, April 1991

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	13.71	17.14%	17.14%	8.00	12.28%	12.28%	21.71	14.96%	14.96%
5-9	12.57	15.71%	32.86%	4.57	7.02%	19.30%	17.14	11.81%	26.77%
10-14	2.29	2.86%	35.71%	5.71	8.77%	28.07%	8.00	5.51%	32.28%
15 - 19	9.14	11.43%	47.14%	9.14	14.04%	42.11%	18.29	12.60%	44.88%
20 - 24	4.57	5.71%	52.86%	5.71	8.77%	50.88%	10.29	7.09%	51.97%
25 - 29	5.71	7.14%	60.00%	4.57	7.02%	57.89%	10.29	7.09%	59.06%
30 - 34	8.00	10.00%	70.00%	4.57	7.02%	64.91%	12.57	8.66%	67.72%
35 - 39	6.86	8.57%	78.57%	8.00	12.28%	77.19%	14.86	10.24%	77.95%
40 - 44	2.29	2.86%	81.43%	3.43	5.26%	82.46%	5.71	3.94%	81.89%
45 - 49	1.14	1.43%	82.86%	0.00	0.00%	82.46%	1.14	0.79%	82.68%
50 - 54	3.43	4.29%	87.14%	0.00	0.00%	82.46%	3.43	2.36%	85.04%
55 - 59	2.29	2.86%	90.00%	3.43	5.26%	87.72%	5.71	3.94%	88.98%
60 - 64	3.43	4.29%	94.29%	0.00	0.00%	87.72%	3.43	2.36%	91.34%
65 - 69	3.43	4.29%	98.57%	1.14	1.75%	89.47%	4.57	3.15%	94.49%
70 - 74	0.00	0.00%	98.57%	2.29	3.51%	92.98%	2.29	1.57%	96.06%
75 - 79	1.14	1.43%	1 00.00%	1.14	1.75%	94.74%	2.29	1.57%	97.64%
80 - 84	0.00	0.00%	100.00%	0.00	0.00%	94.74%	0.00	0.00%	97.64%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	94.74%	0.00	0.00%	97.64%
90 - 94	0.00	0.00%	1 00.00%	0.00	0.00%	94.74%	0.00	0.00%	97.64%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	94.74%	0.00	0.00%	97.64%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	94.74%	0.00	0.00%	97.64%
Missing	0.00	0.00%	100.00%	3.43	5.26%	100.00%	3.43	2.36%	100.00%
TOTAL	80.00	55.12%		65.14	44.88%		145.14	100.00%	

before the next round of surveys in 1991. Figure 10 and Table 11 provide a profile of Karluk's population in the 1990/91 study year.

Temporary Household Members

Table 12 reports characteristics of temporary members of year-round households of the study communities. Temporary household members are those whose primary place of residence was another community, but who lived as guests in year-round households for a portion of the study year. The number of temporary household members varied from a low of just one in Karluk to about 22 in Nanwalek. Very few of these temporary residents lived in the community for an oil spill-related reason, about 5 of 77 people (6.5 percent). As shown in Figure 11, the number of temporary household members dropped sharply in the Prince William Sound communities, Port Graham, and Larsen Bay from 1989, but rose sharply in Nanwalek and Ouzinkie and was virtually unchanged at Karluk.

CASH EMPLOYMENT

The following section focuses on several characteristics on cash employment in the seven communities during the study year, with an emphasis on average length of employment during this 12-month period, oil spill cleanup employment, and cash income. Comparisons with the first oil spill year will be made for these employment characteristics. (See Appendix C through Appendix I for other employment and income data collected as part of the household survey.)

Chenega Bay

Table 13 summarizes cash employment characteristics for adult members of sampled Chenega Bay households for the study year of April 1990 to March 1991. Of the estimated 51 adults in the community, 47 (90.9 percent) had some cash employment during the study period. However, only 15.0 percent of the employed adults were employed year-round. The average number of months employed was 5.0, a substantial reduction from the average of 7.5 months the year before (Fig. 12). Appendix Tables C-1 through C-3 provide additional data on employment and cash income in Chenega Bay during the 1990/91 study year.

Oil spill employment continued to be significant in Chenega Bay in the second year after the spill. As reported in Table 14, 35.2 percent of the jobs held by Chenega Bay residents in the 1990/91 study year were related to the oil spill clean-up. These jobs provided 22.8 percent of the earned cash income in the community, a very significant source of income but down sharply from the 66.7 percent of total earned income the year before (Fig. 13, Fig. 14). Per capita earned income in Chenega Bay dropped from over $20,000 in 1989/90 to about $11,865 in 1990/91 (Fig. 15), although, due to a large part to oil spill jobs, cash incomes at Chenega Bay were larger than those of any other study community in 1990/91 (Fig. 13).

Figure 10. Population Profile, Karluk, April 1991

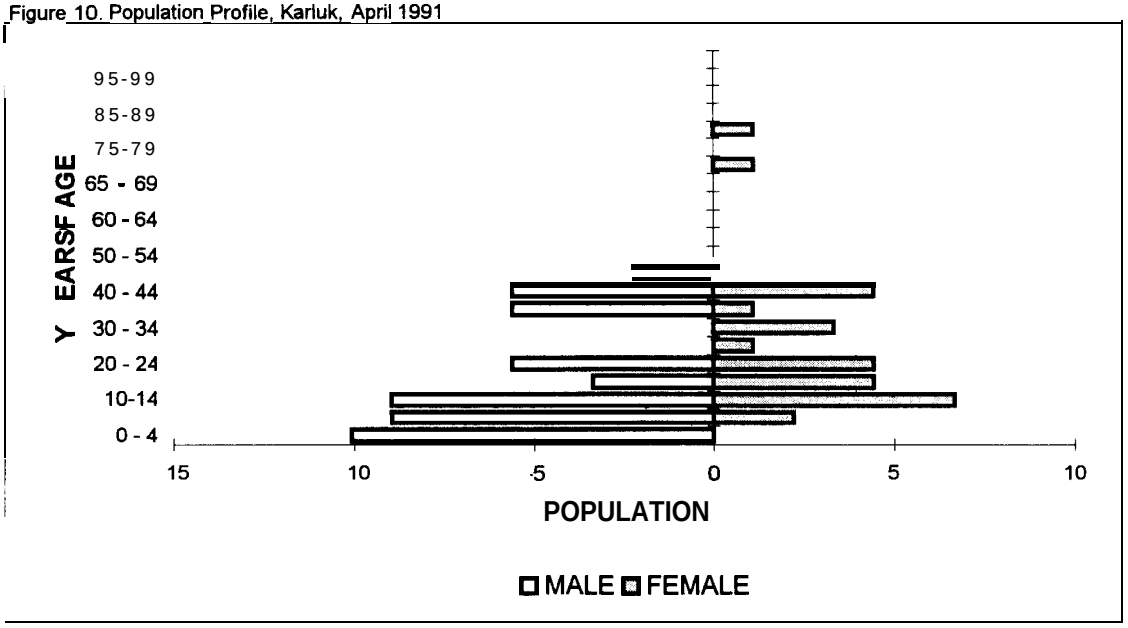


Table 11. Population Profile, Karluk, April 1991

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	10.06	19.57%	19.57%	0.00	0.00%	0.00%	10.06	12.16%	12.16%
5-9	8.94	17.39%	36.96%	2.24	7.14%	7.14%	11.18	13.51%	25.68%
10-14	8.94	17.39%	54.35%	6.71	21.43%	28.57%	15.65	18.92%	44.59%
15 - 19	3.35	6.52%	60.87%	4.47	14.29%	42.86%	7.82	9.46%	54.05%
20 - 24	5.59	10.87%	71.74%	4.47	14.29%	57.14%	10.06	12.16%	66.22%
25 - 29	0.00	0.00%	71.74%	1.12	3.57%	60.71%	1.12	1.35%	67.57%
30 - 34	0.00	0.00%	71.74%	3.35	10.71%	71.43%	3.35	4.05%	71.62%
35 - 39	5.59	10.87%	82.61%	1.12	3.57%	75.00%	6.71	8.11%	79.73%
40 - 44	5.59	10.87%	93.48%	4.47	14.29%	89.29%	10.06	12.16%	91.89%
45 - 49	2.24	4.35%	97.83%	0.00	0.00%	89.29%	2.24	2.70%	94.59%
50 - 54	0.00	0.00%	97.83%	0.00	0.00%	89.29%	0.00	0.00%	94.59%
55 - 59	0.00	0.00%	97.83%	0.00	0.00%	89.29%	0.00	0.00%	94.59%
60 - 64	0.00	0.00%	97.83%	0.00	0.00%	89.29%	0.00	0.00%	94.59%
65 - 69	0.00	0.00%	97.83%	0.00	0.00%	89.29%	0.00	0.00%	94.59%
65 - 69	0.00	0.00%	97.83%	0.00	0.00%	89.29%	0.00	0.00%	94.59%
70 - 74	0.00	0.00%	97.83%	1.12	3.57%	92.86%	1.12	1.35%	95.95%
75 - 79	0.00	0.00%	97.83%	0.00	0.00%	92.86%	0.00	0.00%	95.95%
80 - 84	0.00	0.00%	97.83%	1.12	3.57%	96.43%	1.12	1.35%	97.30%
85 - 89	0.00	0.00%	97.83%	0.00	0.00%	96.43%	0.00	0.00%	97.30%
90 - 94	0.00	0.00%	97.83%	0.00	0.00%	96.43%	0.00	0.00%	97.30%
95 - 99	0.00	0.00%	97.83%	0.00	0.00%	96.43%	0.00	0.00%	97.30%
100 - 104	0.00	0.00%	97.83%	0.00	0.00%	96.43%	0.00	0.00%	97.30%
Missing	1.12	2.17%	100.00%	1.12	3.57%	100.00%	2.24	2.70%	100.00%

Table 12. Characteristics of Temporary Household Members, Study Communities, 1990/91.

	Chenega Bay	Tatitlek	Nanwalek	Port Graham	Karluk	Larsen Bay	Ouzinkie
Number of Temporary Members	7.00	3.29	22.26	4.78	1.12	20.57	17.81
Percentage also Living in household in 1989	16.7	.0	21.1	50.0	.0	33.3	40.0
Purpose of Stay							
Oil Spill							
Number	2.33	.00	.00	.00	.00	2.29	.00
Percentage	33.3	.0	.0	.0	.0	11.1	.0
Non Oil Spill							
Number	4.67	3.29	22.26	4.70	1.12	18.29	17.81
Percentage	66.7	100.0	100.0	100.0	100.0	88.9	100.0
Average Stay in Months	4.63	2.00	5.05	6.75	8.00	2.67	2.94
Temporary Residents							
Related to HH Head							
Number	5.83	1.65	17.57	4.78	1.12	8.00	10.02
Percentage	83.3	50.0	78.9	100.0	100.0	38.9	56.3
Not Related to HH Head							
Number	1.17	1.65	4.69	.00	.oo	12.57	7.79
Percentage	16.7	50.0	21.1	.0	.0	61.1	43.8
Subsistence Harvest Activities in Communit by Temporary Residents							
Hunted							
Number	.00	.00	.00	.00	1.12	4.57	2.23
Percentage	.0	.0	.0	.0	100.0	22.2	12.5
Fished							
Number	.00	.00	9.37	.00	1.12	16.00	4.45
Percentage	.0	.0	42.1	.0	100.0	77.8	25.0
Trapped							
Number	.00	.00	.00	.00	.00	.oo	.00
Percentage	.0	.0	.0	.0	.0	.0	.0
Gathered							
Number	.00	.00	5.86	.00	.00	8.00	1.11
Percentage	.0	.0	26.3	.0	.0	38.9	6.3
Any Activity							
Number	.00	.00	9.37	.00	1.12	16.00	6.68
Percentage	.0	.0	42.1	.0	l w . o	77.6	37.5

Figure 11. Estimated Number of Temporary Residents of Households, Study Communities, 1989/90 and 1990/91

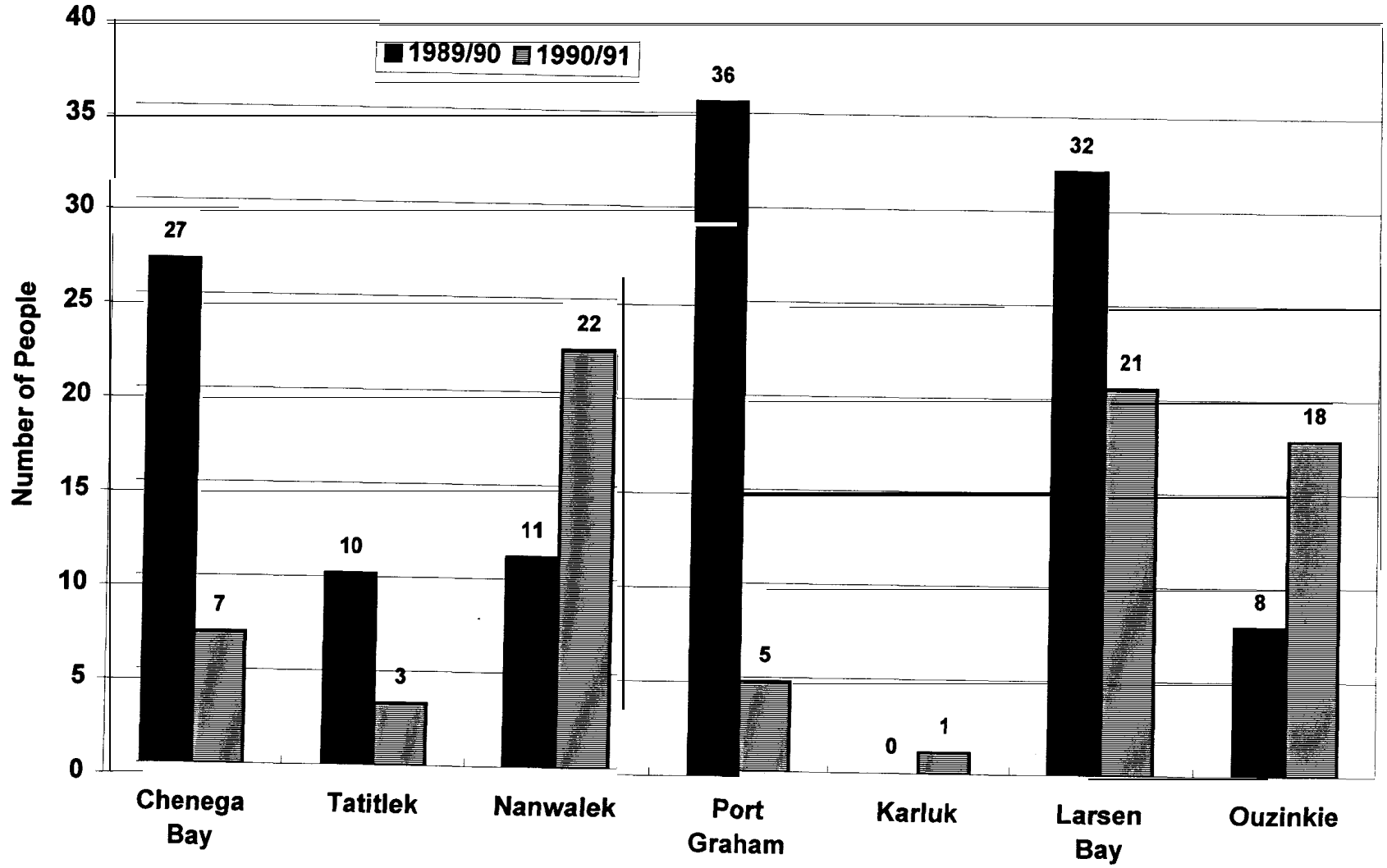


Table 13. Employment Characteristics, Study Communities, 1990/91

Characteristics	Chenega Bay	Tatitlek	Nanwalek	Port Graham	Karluk	Larsen Bay	Ouzinkie
ADULTS							
Total	51.33	74.12	100.74	107.61	44.71	94.66	136.04
Employed							
Number	46.67	56.00	66.77	84.69	34.65	75.43	100.19
Percentage	90.92%	75.55%	66.26%	76.69%	77.50%	79.52%	72.56%
Jobs							
Number	63.00	80.71	83.17	114.78	45.82	148.57	182.57
Mean	1.35	1.44	1.25	1.35	1.32	1.97	1.82
Minimum	1	1	1	1	1	1	1
Maximum	5	5	4	5	3	6	6
Months Employed							
Mean	5.00	4.24	6.53	7.04	5.74	7.27	a.43
Minimum	1	1	1	1	1	1	1
Maximum	12	12	12	12	12	12	12
Year-Round	15.00%	17.65%	19.30%	32.39%	12.90%	25.76%	38.09%
HOUSEHOLDS							
Total	21.00	28.00	41.oo	55.00	19.00	40.00	59.00
Employed							
Number	21.00	28.00	35.14	49.02	19.00	37.71	51.21
Percentage	100.00%	100.00%	65.71%	89.13%	100.00%	94.26%	66.60%
Jobs per Employed Household							
Mean	3.00	2.86	2.37	2.34	2.41	3.94	3.57
Minimum	1	1	1	1	1	1	1
Maximum	11	7	6	7	5	8	10
Employed Adults							
Mean	2.22	2.00	1.90	1.73	1.82	2.00	1.96
Minimum	1	1	1	1	1	1	1
Maximum	5	4	4	3	3	5	4

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991.

Figure 12. Mean Number of Months Employed, Employed Adults, Study Communities, 1989/90 and 1990/91

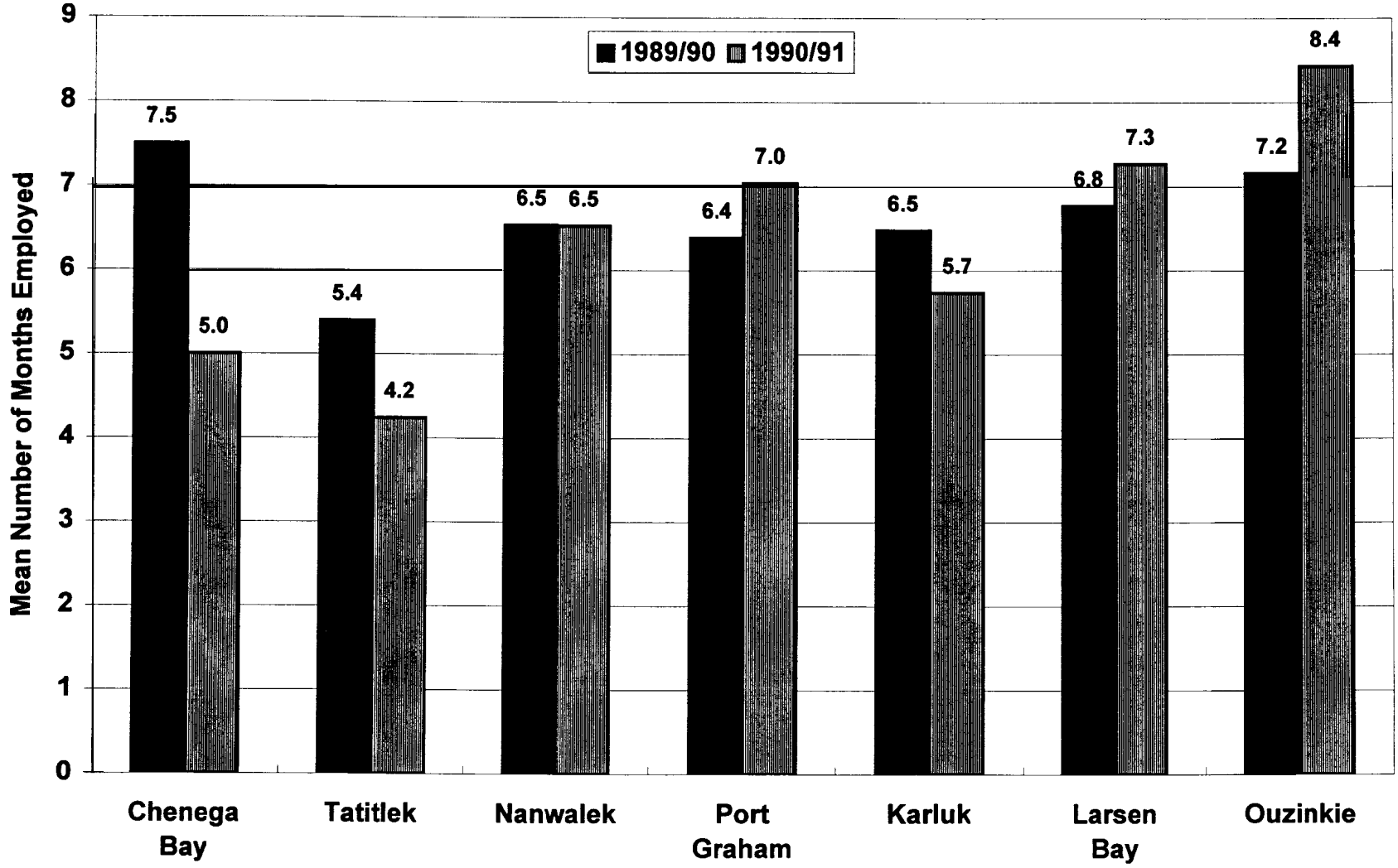


Table 14. Oil Spill Employment Characteristics, Gulf of Alaska Communities, 1990/91 [1]

Characteristics	Chenega Bay	Tatitlek	Port Graham	Karluk	Larsen Bay	Ouzinkie
ADULTS						
Total	51.33	74.12	107.61	44.71	94.86	138.04
Employed Adults	46.67	56.00	84.89	34.65	75.43	100.19
Employed in Oil Spill Jobs						
Number of Adults	17.50	13.18	2.39	5.59	16.00	6.68
Percentage of All Adults	34.09%	17.78%	2.22%	12.50%	16.87%	4.84%
Percentage of Employed Adults	37.50%	23.53%	2.82%	16.13%	21.21%	6.67%
Number of Oil Spill Jobs	22.17	18.12	2..39	5.59	16.00	6.68
Percentage of All Jobs	35.19%	22.45%	2.08%	12.20%	10.77%	3.66%
Months Employed in Oil Spill Jobs						
Mean, All Adults with Oil Spill Jobs	3.93	4.50	2.00	3.00	2.07	2.67
Minimum	1.00	1.00	2.00	2.00	1.00	1.00
Maximum	12.00	12.00	2.00	4.00	3.00	5.00
HOUSEHOLDS						
Total Number of Households	21	28	55	19	40	59
Number of Employed Households	21.00	28.00	49.02	19.00	37.71	51.21
Number with Oil Spill Employment	11.67	13.18	2.39	4.47	11.43	5.57
Percentage of All Households	55.56%	47.06%	4.35%	23.53%	28.57%	9.43%
Percentage of Employed Households	55.56%	47.06%	4.88%	23.53%	30.30%	10.87%
Mean Number of Oil Spill Jobs per Oil Spill Employed Household	1.90	1.38	1.00	1.25	1.40	1.20
Minimum	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	4.00	2.00	1.00	2.00	2.00	2.00
INCOME						
Percentage of All Income from Oil Spill Employment	19.21	10.20	0.64	10.01	5.44	2.36
Percentage of Earned Income from Oil Spill Employment	22.82	14.56	1.01	13.55	7.65	3.72
Earned income	$913,626	$597,451	$908,854	$486,529	$1,015,123	$1,348,860
Income from Oil Spill Employment						
Community Total	$208,448	$86,965	$9,207	$65,941	$77,625	$50,206
Average Household	$9,926	$3.106	$167	$3,471	$1,941	$851
Per Capita	$2,707	$704	$56	$797	$535	$246

[1] There were no oil spill jobs repotted in the sample for Nanwalek.

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991.

Figure 13. Per Capita Earned Income by Source, 1990/91

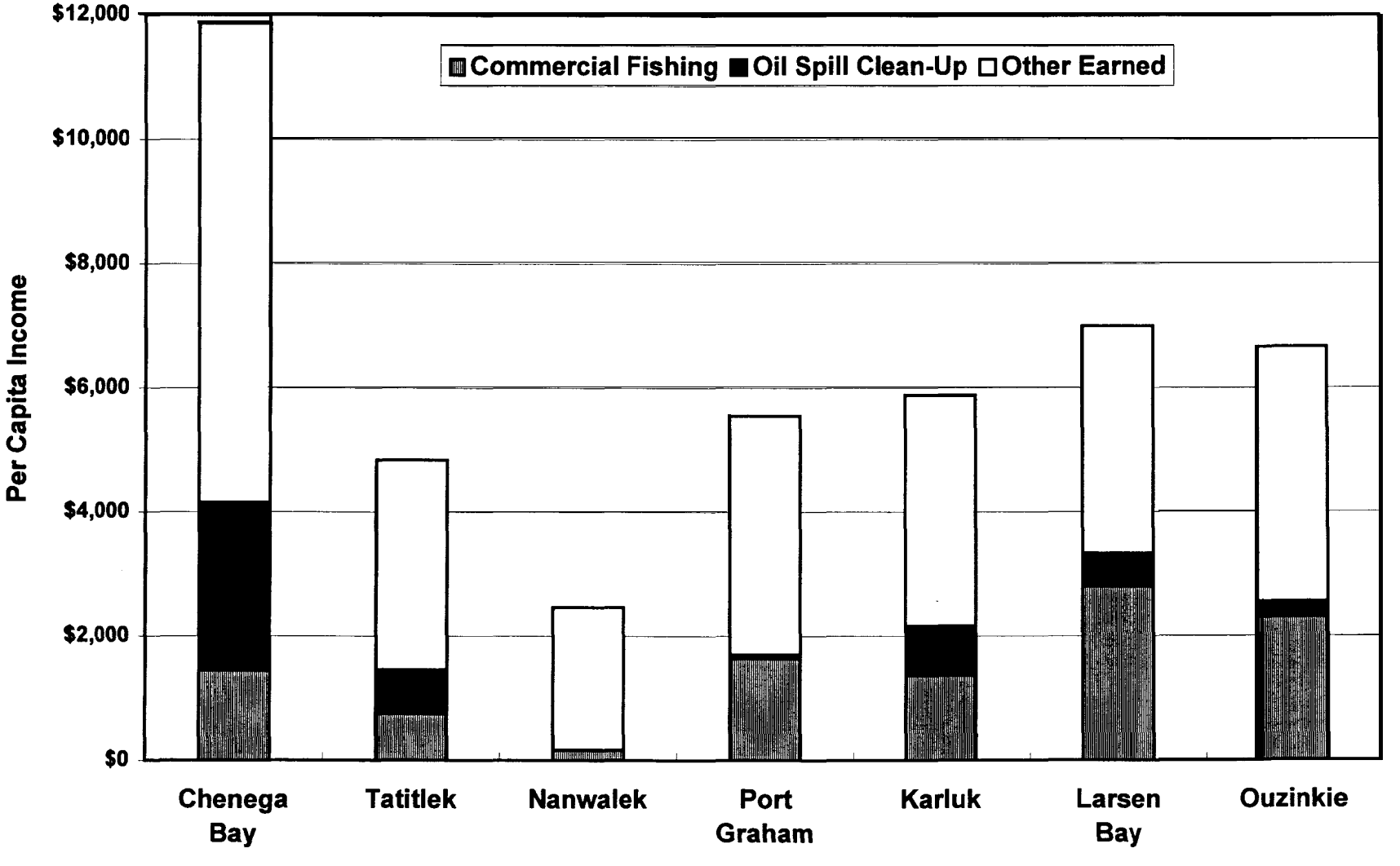


Figure 14. Percentage of Earned Income from Oil Spill Cleanup Jobs, Study Communities, 1989/90 and 1990/91

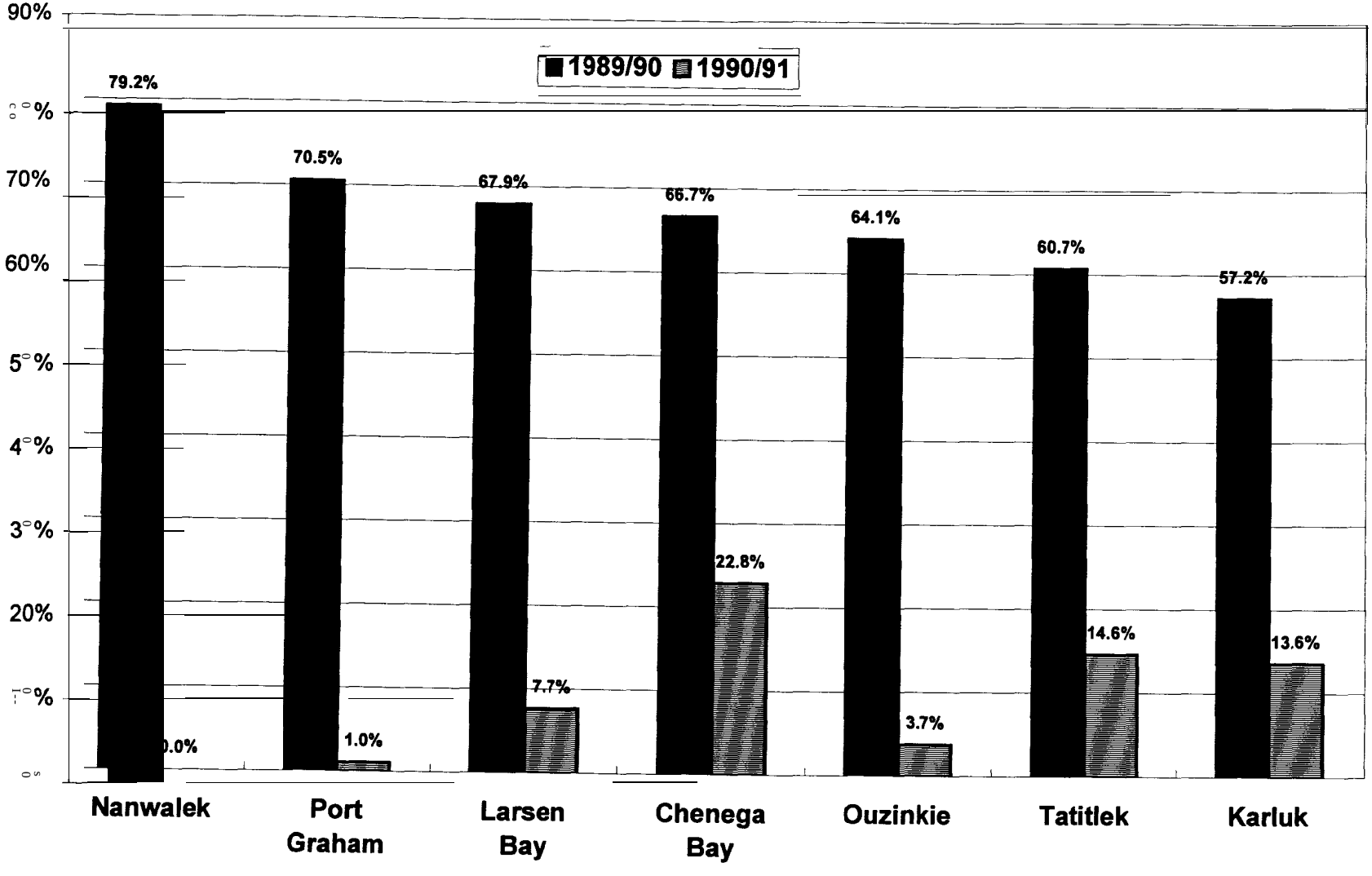
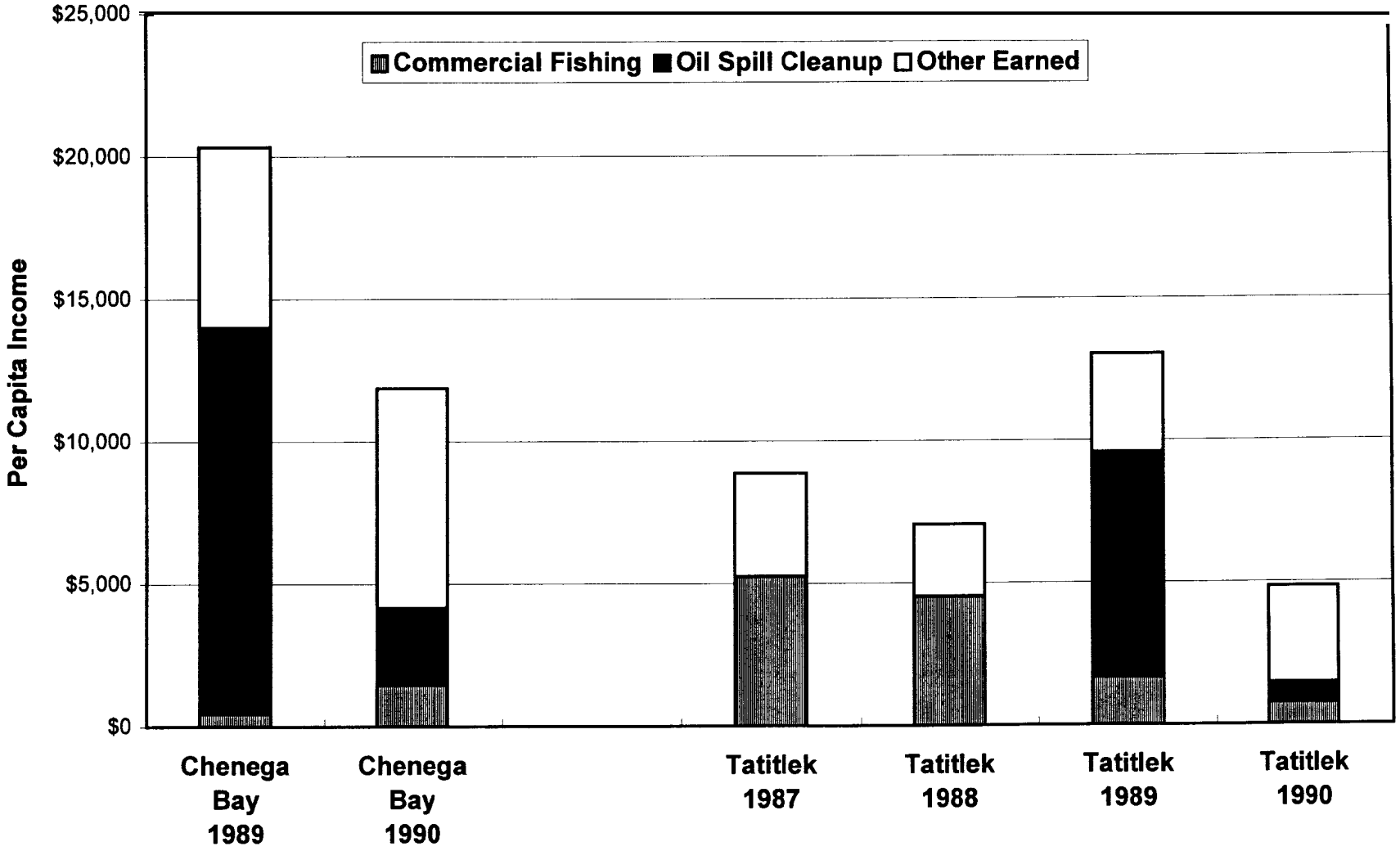


Figure 15. Per Capita Earned Income by Source, Chenega Bay and Tatitlek



Tatitlek

As shown in Table 13, 75.6 percent of the adults in Tatitlek households held at least one job for a portion of the 1990/91 study year. However, as at Chenega Bay, the mean number of months employed in these jobs decreased, to 4.2 months compared to 5.4 the year before (Fig. 12). Only 17.7 percent of the employed adults in Tatitlek worked for a full 12 months. Appendix Tables D-1 through D-3 provide additional data on employment and income in Tatitlek during the 1990/91 study year.

Oil spill employment declined in Tatitlek in the second post spill year, but remained more important than in any other study community except Chenega Bay (Table 14). About 22.5 percent of the jobs held by Tatitlek residents were related to oil spill clean-up. These jobs provided about 14.6 percent of the earned income in the community, down from 60.7 percent in the first post-spill year (Fig. 13, Fig. 14). Largely because of the decline in oil spill employment, earned cash income in Tatitlek dropped to about $4,837 per capita in 1990/91, compared to about $13,000 per person the year before (Fig. 15).

Nanwalek

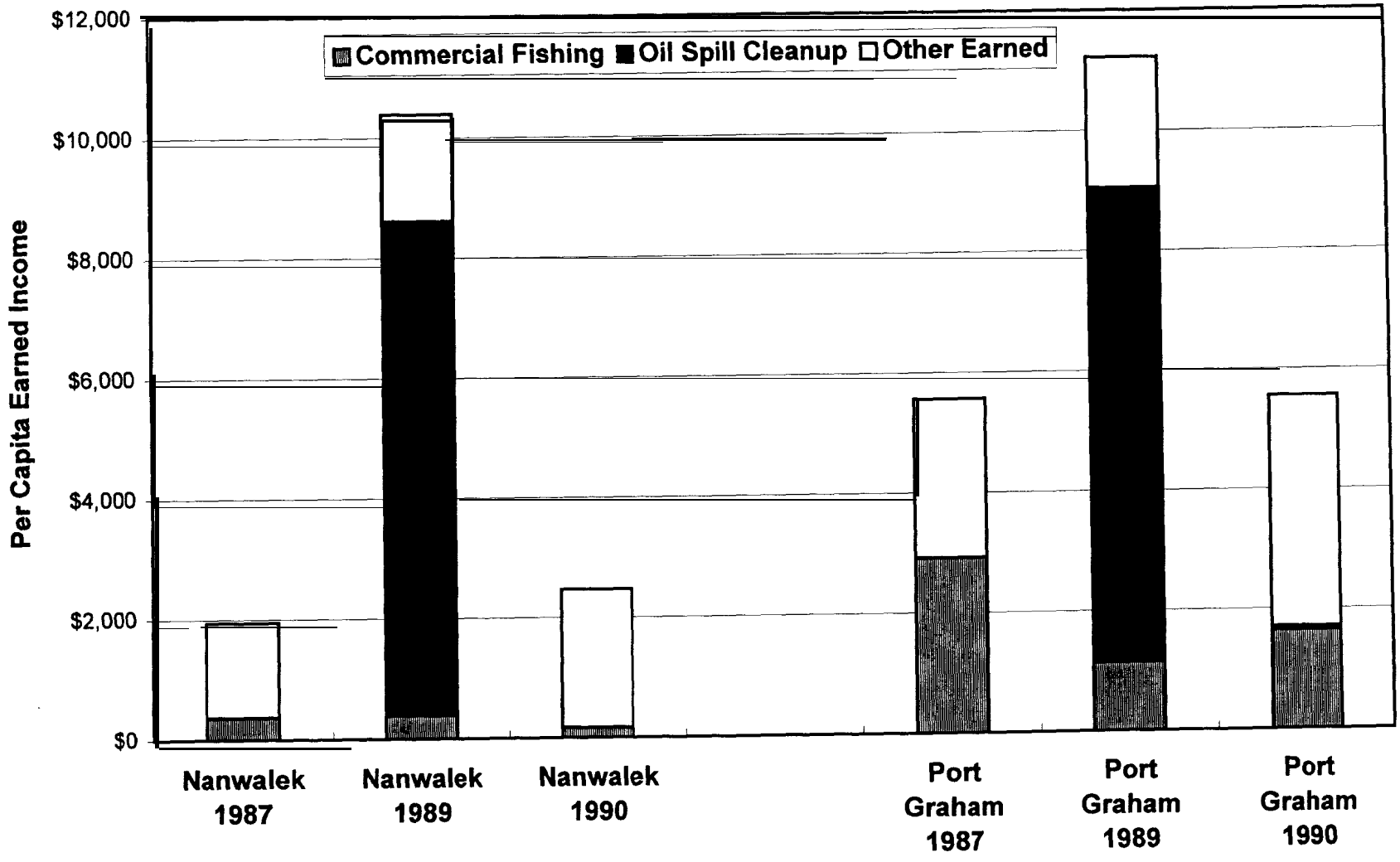
Of the estimated 101 adults in Nanwalek households, 67 (66.3 percent) had some form of wage employment in at least one month during the April 1990 to March 1991 study year (Table 13). Of these, 19.3 percent worked year-round. The average number of months employed for adults in the community was about 6.5, virtually the same as the 6.5 months recorded for 1989 (Fig. 12). Appendix Tables E-1 through E-3 provide additional data on employment and income in Nanwalek during the 1990/91 study year. Earned cash incomes in Nanwalek fell markedly compared to the year before, from about $10,400 per person to just $2,465 per person (Fig. 16). This drop was due to the total lack of oil spill related employment in the community in the second post-spill year (Table 14, Fig. 13); in the first post-spill year, 79.2 percent of Nanwalek's earned income came from oil spill jobs (Fig. 14).

Port Graham

As reported in Table 13, 78.9 percent of the adults in Port Graham households held at least one job for a portion of the 1990/91 study year. As shown in Figure 12, the average number of months employed for Port Graham's adult population was 7.0, up slightly from 6.5 months in 1989. Overall, 32.4 percent of the adults in the community worked in cash-producing jobs year-round during the study year. Appendix Tables F-1 through F-3 provide additional data on employment and income in Port Graham during the 1990/91 study year.

As in each study community, oil spill-related employment in Port Graham declined in the second post-spill year. Just 2.1 percent of the jobs held by community residents were related to the oil spill in 1990/91 (Table 14). In 1989, 70.5 percent of the earned income in Port Graham derived from oil spill jobs; this dropped to just 1.0 percent in 1990/91 (Fig. 13, Fig. 14). Per capita earned cash incomes in Port

Figure 16. Per Capita Earned Income by Source, Nanwalek and Port Graham



Graham dropped to pre-spill levels, at about $5,548 per person, compared to the increase to over $11,000 per person in 1989 due to the availability of oil spill cleanup jobs (Fig. 16).

Ouzinkie

During at least a portion of the April 1990 to March 1991 study year, 72.6 percent of the estimated 138 adults in Ouzinkie had a cash-producing job (Table 13). Of these, 38.9 percent worked year-round. As shown in Figure 12, the average number of months employed increased in Ouzinkie from 7.3 in 1989 to 8.4 in 1990/91. Appendix Tables G-1 through G-3 provide detailed data on employment and cash income in Ouzinkie by occupational type during the 1990/91 study year.

After providing 64.1 percent of the earned cash income in Ouzinkie in 1989/90, oil spill employment was relatively insignificant in 1990/91, with just 3.7 percent of the income (Fig. 14). Only 3.7 percent of the jobs held by Ouzinkie residents in the 1990/91 study year were related to the spill (Table 14). Largely due to the decline in oil spill employment, earned cash income in Ouzinkie dropped to about $6,658 in 1990/91 compared to about $12,500 the year before (Fig. 17).

Larsen Bay

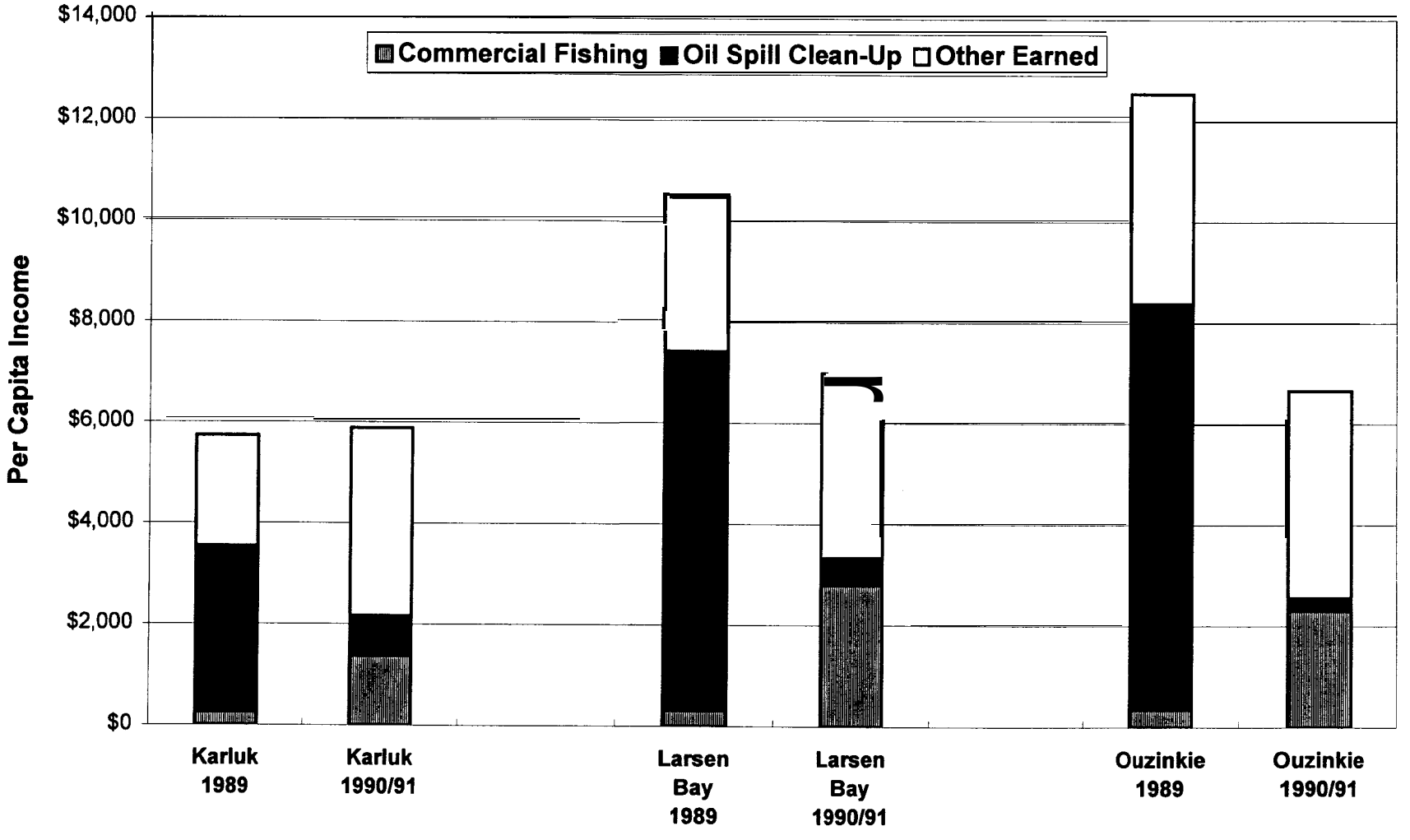
Table 13 reports characteristics of cash employment for adults in Larsen Bay households for the 12-month study period in 1990/91. Of the estimated 95 adults in the community, 79.5 percent were employed for at least a portion of the study year. The mean number of months employed for adults in Larsen Bay increased from 6.9 in 1989 to 7.3 in 1990/91. Only 25.8 percent of the employed adults worked on cash-producing jobs year-round. Appendix Tables H-1 through H-3 provide additional data on employment and cash income in Larsen Bay by occupational type during the 1990/91 study year.

About 10.8 percent of the jobs held by Larsen Bay residents in 1990/91 were related to the oil spill cleanup (Table 14). The contribution of these jobs to the earned cash income of Larsen Bay residents dropped to 7.7 percent, compared to 67.9 percent in 1989 (Fig. 14). Overall, earned cash income per person declined to about $6,994, compared to about $10,500 the year before. This drop was largely due to reduced income from oil spill jobs, although an increase in commercial fishing income balanced some of this decline (Fig. 17).

Karluk

As shown in Table 13, 77.5 percent of the adults in Karluk households worked for cash for at least a portion of the study period. As shown in Figure 12, the average number of months employed for Karluk employed adults declined slightly from 6.5 in 1989 to 5.7 in 1990/91. Appendix Tables I-1 through I-3 provide more details on employment and cash income in Karluk by occupational type during the 1990/91 study year.

Figure 17. Per Capita Earned Income by Source, Karluk, Larsen Bay, and Ouzinkie



Karluk was the only one of the seven study communities which did not experience a sharp decline in cash income in 1990/91 compared to the year before (Fig. 17). This is not because cash incomes in Karluk were high; rather, while there was a decline in oil spill employment's contribution to total earned income (from 57.2 percent in 1989 to 13.6 percent in 1990/91 [Fig. 14]), small increases in commercial fishing income and other earned income balanced this loss.

Food Purchases

Respondents were asked to estimate the amount of meat, fish, and poultry that their household purchased per month during the study year. Table 15 provides the results for each community, expressed as the average annual number of pounds purchased per capita and per household. The results ranged from a low of about 134.5 pounds per capita at Karluk to a high of 207.5 pounds per capita at Chenega Bay. As also shown in Table 15, in four study communities (Nanwalek, Ouzinkie, Port Graham, and Tatitlek), purchased foods contributed just under half of the estimated total of meat, fish, and poultry either purchased or harvested by the community. (An added source of meat, fish, and poultry is that received from other communities, for which a quantified estimate is not available.) Purchased meat contributed the highest portion of the community meat supply at Chenega Bay, at 61.2 percent, and the lowest at Karluk (25.4 percent) and Larsen Bay (32.6 percent).

Respondents were also asked to estimated the cost of their monthly food bill (for all foods, not just meat, fish, and poultry). The results are provided in Table 16 as the average household expenditure for food for each community in the study year. Estimates ranged from a low of about $5,829 per household at Chenega Bay to a high of $9,340 at Tatitlek. As also shown in Table 16, Tatitlek households spent about almost 31 percent of their cash income on food purchases in 1990/91 and Nanwalek households spent 29.5 percent, the highest percentage of any of the study communities. The lowest percentage was at Chenega Bay, at 11.3 percent.

Table 15. Estimates of Annual Meat, Fish, and Poultry Purchases, Study Communities, 1990/91

Community	Mean Annual Pounds of Meat, Fish, and Poultry Purchased:		Purchased Meat as Percentage of All Meat*
	Per Capita	Per Household	
Chenega Bay	207.5	761.6	61.2%
Karluk	134.5	585.0	25.4%
Larsen Bay	162.5	589.8	32.6%
Nanwalek	159.4	715.5	47.8%
Ouzinkie	190.3	652.6	48.9%
Port Graham	175.9	524.3	45.8%
Tatitlek	128.1	565.0	46.8%

* Computed value of mean annual pounds purchased divided by the sum of pounds purchased and mean household pounds harvested less vegetation.

Table 16. Estimates of Cost of Annual Food Purchases, Study Communities, 1990/91

Community	Mean Annual Household Expense for Food	Percentage of All Income Used to Purchase Food
Chenega Bay	$5,829	11.28%
Nanwalek	$6,636	29.47%
Karluk	$7,048	20.33%
Larsen Bay	$7,474	20.96%
Ouzinkie	$7,727	21.43%
Port Graham	$5,333	20.34%
Tatitlek	$9,340	30.67%

CHAPTER THREE: SUBSISTENCE HARVESTS AND USES

OVERVIEW OF FINDINGS

The purpose of this chapter is to summarize the findings of the research regarding characteristics of subsistence harvest and use in the seven study communities during the 1990/91 study year. Comparisons will be draw between the study year, the previous year (that is, the first year after the *Exxon Valdez* oil spill), and the years before the spill. The focus is on total harvest levels, harvest levels by major resource category (salmon, other fish, marine invertebrates, land mammals, marine mammals, birds and eggs, and wild plants), range of resources used and harvested, and levels of participation in subsistence uses. Appendix C through Appendix I contain more detailed study findings for each community regarding fish harvests by gear type and removal of fish and marine invertebrates from commercial harvests for home use.

Table 17 and Table 18 give an overview of resource harvest and use characteristics in the study communities in 1990/91. Figure 18 compares overall levels of subsistence harvests in the seven study communities, as expressed in pounds useable weight per capita, for the study year with estimates from previous years. Estimated subsistence harvests in Tatitlek continued to drop in the second post-spill year, and Chenega Bay's estimated harvest was virtually identical to the year before. Subsistence harvests in both Prince William Sound villages remained far below pre-spill averages. In contrast, per capita harvests in Nanwalek and Port Graham increased over the year before. Nanwalek's harvest continued to be lower than that of 1987, the only available pre-spill estimate, but Port Graham's virtually matched that of 1987. The largest increases in subsistence harvests occurred in the three Kodiak Island Borough villages. Subsistence harvests in Karluk and Larsen Bay approached some pre-spill levels. Ouzinkie's per capita harvest more than doubled, but remained much lower than either pre-spill year for which data are available.

The range of resources used per household increased in all seven communities in 1990/91 compared to the previous year (Fig. 19). Increases were greatest in the lower Cook Inlet communities and Ouzinkie, while, as with harvest quantities, the Prince William Sound communities lagged behind. (Changes in ranges of resources used, harvested, and shared are discussed in more detail below in the sections on each community.)

Table 19 reports respondents' assessments of their overall levels of subsistence uses in the 1990/91 study year compared to the first post-spill year. For the most part, these assessments are consistent with the study findings regarding quantified harvest levels as summarized in the previous paragraph. For example, most respondents in the Lower Cook Inlet and Kodiak Island Borough villages reported that their subsistence uses had gone up in 1990/91 compared to the year before, 53.0 percent of the households and 52.0 percent, respectively (Fig. 20). In contrast, 90.6 percent of the respondents in

Table 17. Resource Harvest and Use Characteristics, Study Communities, 1990/91

Study Community	Chenega Bay	Tatitlek	Nanwelak	Port Graham	Karluk	Larsen Bay	Ouzinkie
Mean Number Of Resources Used Par Household	10.78	14.35	22.37	17.35	15.88	19.20	17.30
Minimum	3.00	1.00	10.00	1.00	1.00	2.00	4.00
Maximum	20.00	23.00	40.00	35.00	37.00	41.00	41.00
95 % Confidence Limit (+/-)	8.15	13.84	4.63	5.19	9.22	6.06	4.13
Median	10.50	14.00	22.00	18.00	16.00	18.00	15.00
Mean Number Of Resources Attempted To Harvest par Household	7.17	10.41	15.40	12.07	11.35	12.51	12.26
Minimum	0.00	2.00	1.00	1.00	0.00	0.00	0.00
Maximum	25.00	24.00	33.00	36.00	36.00	33.00	38.00
95 % Confidence Limit (+/-)	17.56	22.02	6.43	7.34	12.99	8.72	6.62
Median	5.50	10.00	14.00	11.00	10.00	13.00	10.00
Mean Number Of Resources Harvested ar Household	8.44	8.82	14.77	10.96	11.12	12.17	12.08
Minimum	0.00	2.W	1.00	0.00	0.00	0.00	0.00
Maximum	20.00	19.00	33.00	32.W	36.00	33.00	38.00
95 % Confidence Limit (+/-)	17.68	20.22	6.79	7.29	13.06	8.85	6.73
Median	5.00	9.00	13.00	10.00	9.00	11.00	10.00
Mean Number Of Resources Received ar Household	6.22	7.88	13.09	9.30	9.94	12.14	7.62
Minimum	1.00	0.00	5.00	0.00	1.00	0.00	0.00
Maximum	15.00	18.00	36.00	22.00	26.00	38.00	31.00
95 % Confidence Limit (+/-)	11.97	28.29	8.23	7.55	13.68	9.87	7.52
Median	5.00	8.00	10.00	7.50	7.00	9.00	6.00
Mean Number Of Resources Given Away ar Household	3.61	5.71	8.91	6.65	7.88	9.54	6.08
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	17.00	17.w	28.00	20.00	32.00	33.00	28.00
95 % Confidence Limit (+/-)	20.75	30.60	9.47	9.98	17.64	10.88	10.57
Median	2.00	3.00	7.00	6.00	6.00	8.00	3.00
Mean Household Hat-vast, Pounds	501.72	673.68	813.08	637.22	1,747.95	1,250.11	704.80
Minimum	0.00	11.50	0.40	0.24	0.00	0.00	0.00
Maximum	1,842.34	4,200.54	2,498.88	3537.48	11,860.80	5305.72	4,185.16
Total Pounds Harvested	10,536.11	18,863.04	33,336.30	35,047.33	33,211.11	50,004.48	41,583.15
Community Per Capita Harvest, Pounds	136.83	152.70	181.26	213.96	401.58	344.52	205.24
Percentage of Households:							
Using Any Resource	I w . w	I w . w	I w . w	I w . w	I w . w	I w . w	100.00
Attempting To Harvest Any Resource	94.44	100.00	I w . w	I w . w	94.12	97.14	98.11
Harvesting Any Resource	94.44	I w . w	100.00	97.83	94.12	97.14	98.11
Receiving Any Resource	100.00	82.35	100.00	97.83	100.00	94.29	96.23
Giving Away Any Resource	83.33	88.24	97.14	89.13	88.24	82.86	77.36

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table 18. Resource Harvests in Pounds Usable Weight per Capita by Resource Category, Study Communities, April 1990 - March 1991

Resource Category	Chenega Bay		Tatitlek		Nanwalek		Port Graham		Karluk		Larsen Bay		Ouzinkie	
	Pounds/ Capita	% of Total	Pounds/ Capita	% of Total	Pounds/ Capita	% of Total	Pounds/ Capita	% of Total	Pounds/ Capita	% of Total	Pounds/ Capita	% of Total	Pounds/ Capita	% of Total
Salmon	37.0	27.0%	59.7	39.1%	91.5	50.5%	95.0	44.4%	293.1	73.0%	104.9	30.4%	75.5	36.8%
Other Fish	24.8	18.2%	39.5	25.8%	56.4	31.1%	92.8	43.4%	50.8	12.7%	105.2	30.5%	68.2	33.2%
Marine Invertebrates	1.6	1.1%	1.9	1.3%	16.7	9.2%	14.5	6.8%	12.9	3.2%	54.9	15.9%	13.9	6.8%
Land Mammals	38.4	28.1%	17.5	11.4%	1.8	1.0%	1.5	0.7%	30.5	7.6%	42.6	12.4%	23.3	11.3%
Marine Mammals	29.3	21.4%	24.3	15.9%	5.4	3.0%	3.3	1.5%	5.3	1.3%	23.2	6.7%	10.4	5.1%
Birds and Eggs	0.6	0.4%	2.6	1.7%	2.2	1.2%	1.1	0.5%	3.0	0.7%	4.7	1.4%	7.5	3.6%
Wild Plants	5.2	3.8%	7.2	4.7%	7.3	4.0%	5.7	2.7%	6.0	1.5%	9.1	2.6%	6.5	3.2%
Total	136.8		152.7		181.3		214.0		401.6		344.5		205.2	

Figure 18. Harvests of Wild Resources, Pounds Usable Weight per Capita, Study Communities, Pre-Spill and Post-Spill

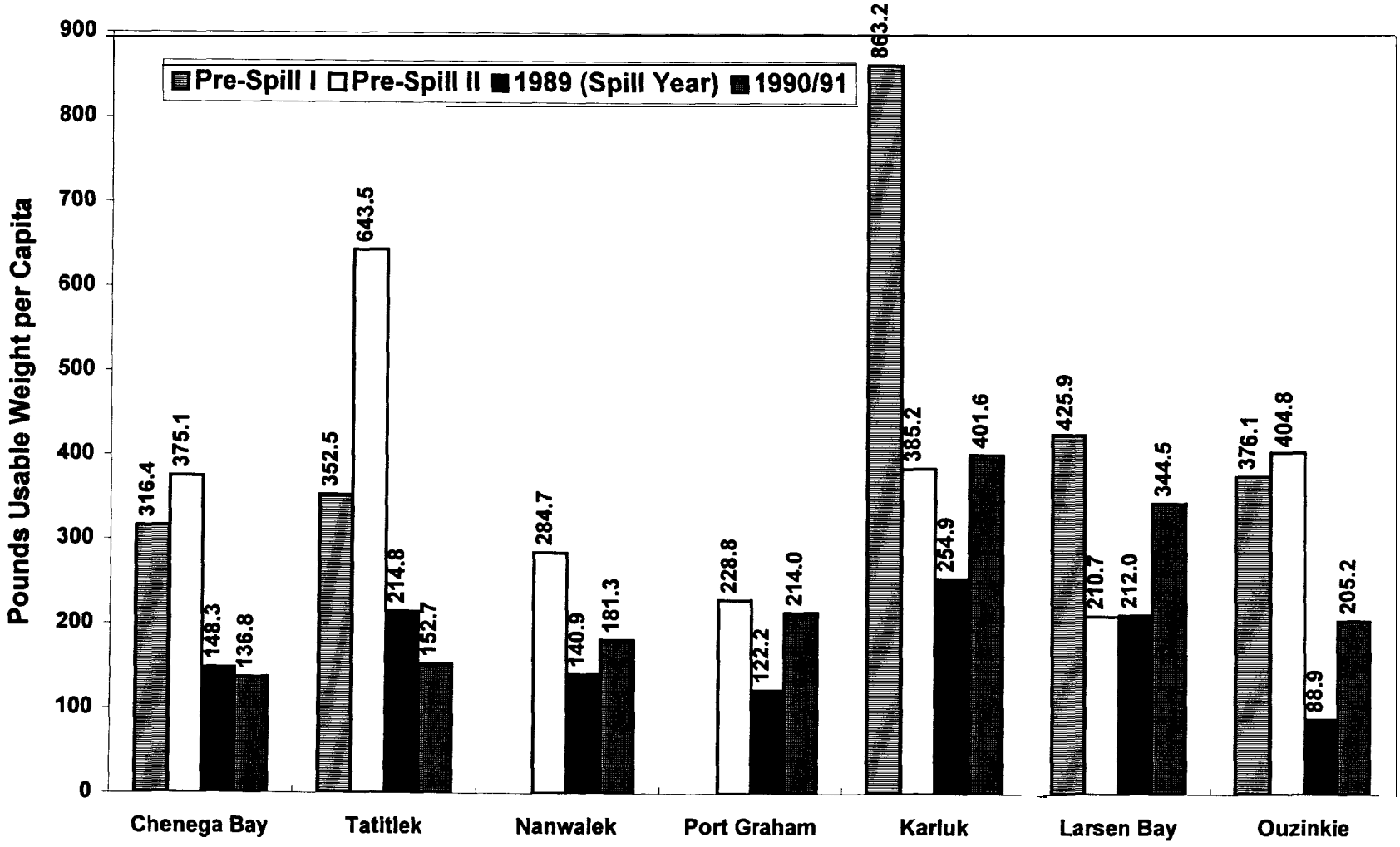


Figure 19. Average Number of Kinds of Resources Used per Household, Study Communities, 1989 and 1990/91

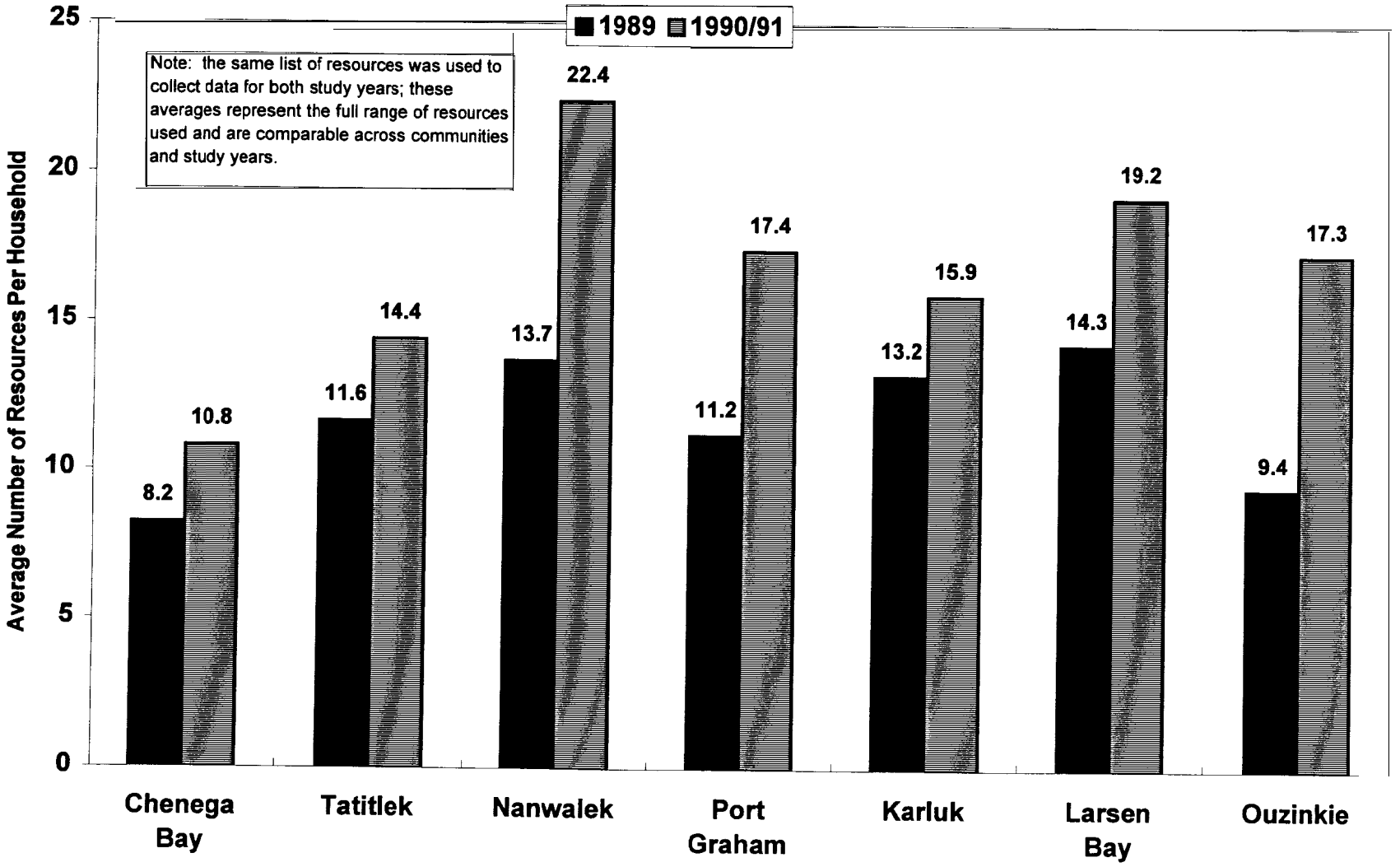
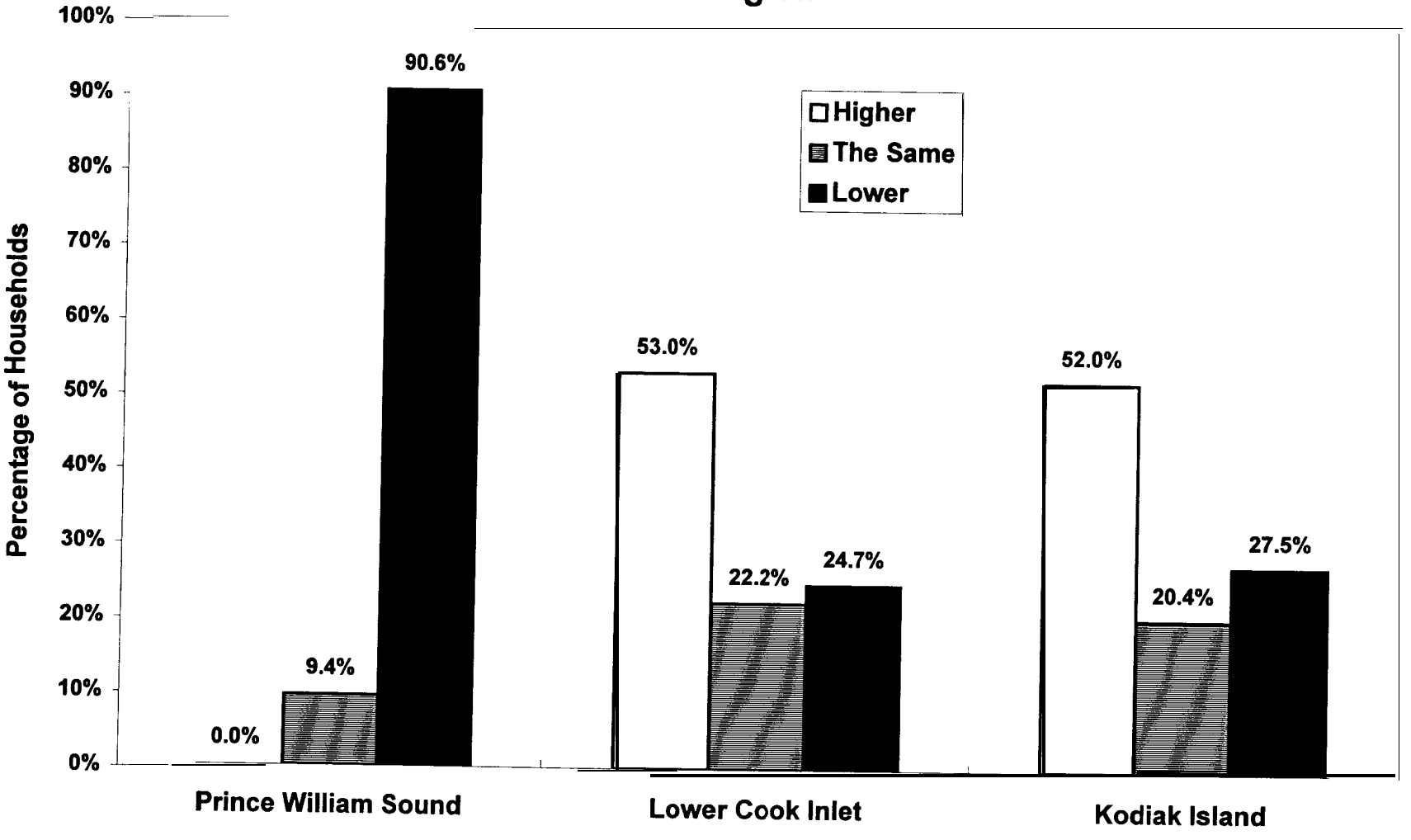


Table 19. Household Assessments of Change in Overall Wild Resource Uses Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	2	11.8%	0	0.0%	15	88.2%	0	0.0%	1	6.7%	14	93.3%
Chenega Bay	18	0	0.0%	1	5.6%	0	0.0%	17	94.4%	0	0.0%	2	11.8%	15	88.2%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	35	100.0%	18	51.4%	9	25.7%	8	22.9%
Port Graham	46	0	0.0%	0	0.0%	0	0.0%	46	100.0%	25	54.3%	9	19.6%	12	26.1%
Ouzinkie	53	0	0.0%	2	3.8%	0	0.0%	51	96.2%	33	64.7%	9	17.6%	9	17.6%
Larsen Bay	35	0	0.0%	3	8.6%	0	0.0%	32	91.4%	15	46.9%	6	18.8%	11	34.4%
Karluk	17	0	0.0%	2	1.8%	0	0.0%	15	88.2%	3	20.0%	5	33.3%	7	46.7%
TOTAL	221	0	0.0%	10	4.5%	0	0.0%	211	95.5%	94	42.5%	41	18.6%	76	34.4%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the during year.
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Figure 20. Households' Assessments of Overall Levels of Subsistence Uses in 1990/91 Compared to the Previous Year, 1989, by Subregion



Chenega Bay and Tatitlek said that they believed that overall, subsistence uses in the second post-spill year were even lower than in 1989/90. (The tables in Appendix J provide households' assessments of changes in 1990 compared to 1989 for each resource category and reasons for these changes.)

As shown in Table 20 and Figure 21, there were also differences between the three regions regarding post-spill and pre-spill comparisons. Despite the increase in uses over the year before, about half (50.0 percent) of the Kodiak Island Borough respondents said that subsistence uses in 1990/91 were still lower than pre-spill norms. On the other hand, the rest said their uses were about the same overall as before the spill (40.2 percent) or were higher (9.8 percent). In contrast, almost all (85.2 percent) of the Nanwalek and Port Graham households said that even though their subsistence harvests had improved in 1990/91, they were still below their normal pre-spill levels. Finally, consistent with their reports of lowered uses in 1990/91, almost all the respondents in Chenega Bay and Tatitlek (96.9 percent) said that their subsistence uses remained below pre-spill norms as well.

Table 21 provides households' explanations for why their overall harvests or uses had increased over pre-spill norms. Of the 15 households with higher use levels, most (11 households) cited economic conditions or general interest effort (10 households). For those households with lower than normal overall subsistence uses in 1990 (146 households), the most cited abnormal resource conditions and food safety concerns (68 households; 46.6 percent of those with lower uses) and declines in resource abundance (56 households; 38.4 percent) as the cause (Table 22).

As shown in Table 23, most interviewed households (63.3 percent) reported that their harvests or uses of at least one category of wild resources had declined in 1990/91 compared to the previous year. Even more (71.0 percent) said that there had been an increase over the previous year in at least one category. For the entire sample, a larger percentage households cited a reason not connected to the *Exxon Valdez* oil spill as the reason for a decline in uses of any resource category than cited a spill-related cause for a decline, 72.9 percent and 42.9 percent respectively. However, whether or not a household cited the spill as a cause of a decline from the year before appeared closely related to the region of residence of the households. As shown in Figure 22, about 91 percent of Prince William Sound households blamed the spill for a decline and about 28 percent cited a non-spill region. In contrast, in both lower Cook Inlet and Kodiak island, a much larger percentage cited non-spill reasons than spill reasons for lowered uses of a resource compared to the previous year.

As shown in Figure 23, there was a marked change in the lower Cook Inlet and Kodiak Island study communities in 1990 compared to 1989 in the percentage of households that cited the oil spill as a reason for lowered uses than the previous year. (Note that this not mean that the use pattern had returned to pre-spill norms, just that it had not declined in 1990 compared to 1989. Households' assessments of change of resource categories compared to before the spill were not obtained in this round of interviews.) Again in contrast, about the same percentage of Prince William Sound households in 1990 as in 1989 said the spill was the reason for a decline over the previous year.

Table 20. Household Assessments of Changes in Overall Wild Resource Uses Compared to Normal, 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No	Pctg.	No.	Pctg.	No	Pctg.	No	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	2	1.8%	0	0.0%	15	88.2%	0	0.0%	1	6.7%	14	93.3%
Chenega Bay	18	0	0.0%	1	5.6%	0	0.0%	17	94.4%	0	0.0%	0	0.0%	17	100.0%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	35	100.0%	2	5.7%	1	2.9%	32	91.4%
Port Graham	46	0	0.0%	0	0.0%	0	0.0%	46	100.0%	4	8.7%	5	10.9%	37	80.4%
Ouzinkie	53	1	1.9%	2	3.8%	0	0.0%	50	94.3%	4	8.0%	22	44.0%	24	48.0%
Larsen Bay	35	4	1.4%	3	8.6%	0	0.0%	28	80.0%	5	7.9%	10	35.7%	13	46.4%
Karluk	17	1	5.9%	2	11.8%	0	0.0%	14	82.4%	0	0.0%	5	35.7%	9	64.3%
TOTAL	221	6	2.7%	10	4.5%	0	0.0%	205	92.8%	15	6.8%	44	19.9%	146	66.1%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Figure 21. Households' Assessments of Overall Levels of Subsistence Uses in 1990/91 Compared to Before the *Exxon Valdez* Oil Spill

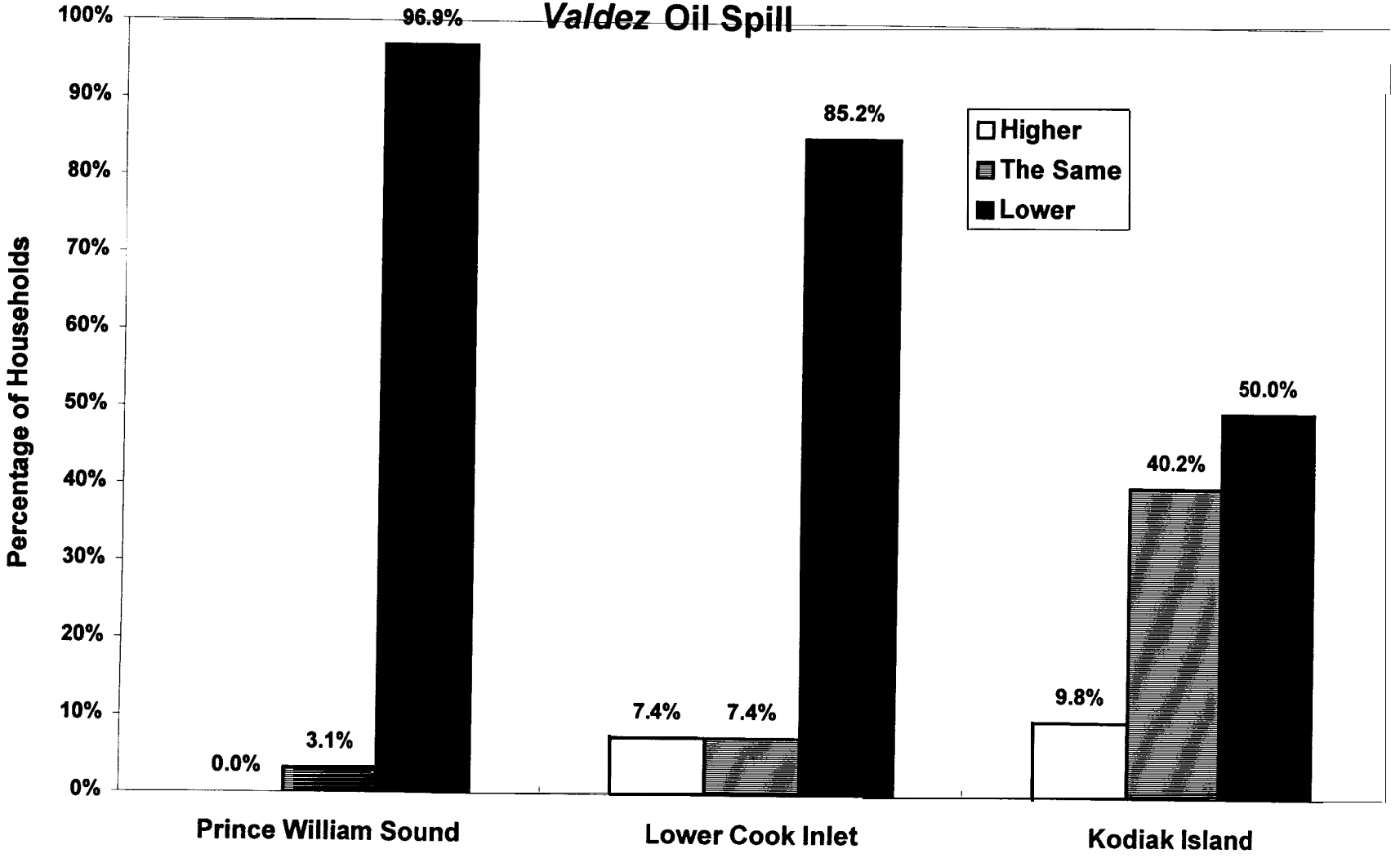


Table 21. Reasons for Increased Harvest/Use of Wild Resources Compared to Normal, 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	2	5.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0%	2	100.0%	0	0.0%
Port Graham	46	4	8.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	75.0%	2	50.0%	0	0.0%
Ouzinkie	53	4	7.5%	2	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%	3	75.0%	0	0.0%
Larsen Bay	35	5	14.3%	2	40.0%	0	0.0%	0	0.0%	1	20.0%	0	0.0%	5	100.0%	3	60.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	15	6.8%	4	1.8%	0	0.0%	0	0.0%	1	0.5%	0	0.0%	11	5.0%	0	4.5%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table 22. Reasons for Decreased Harvest/Use of Wild Resources Compared to Normal, 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	14	82.4%	7	50.0%	13	92.9%	1	7.1%	2	14.3%	0	0.0%	3	21.4%	5	35.7%	0	0.0%
Chenega Bay	18	17	94.4%	15	88.2%	13	76.5%	0	0.0%	3	17.6%	0	0.0%	9	52.9%	9	52.9%	0	0.0%
Nanwalek	35	32	91.4%	17	53.1%	6	18.8%	1	3.1%	4	12.5%	1	3.1%	0	0.0%	6	18.8%	0	0.0%
Port Graham	46	37	80.4%	9	24.3%	14	37.8%	0	0.0%	3	8.1%	1	2.7%	4	10.8%	3	8.1%	0	0.0%
Ouzinkie	53	24	45.3%	14	58.3%	5	20.8%	1	4.2%	4	16.7%	1	4.2%	4	16.7%	5	20.8%	0	0.0%
Larsen Bay	35	13	37.1%	4	30.8%	1	7.7%	2	15.4%	0	0.0%	2	15.4%	3	23.1%	6	46.2%	0	0.0%
Karluk	17	9	52.9%	2	22.2%	4	44.4%	1	11.1%	0	0.0%	0	0.0%	2	22.2%	3	33.3%	0	0.0%
TOTAL	221	146	66.1%	68	30.8%	56	25.3%	6	2.7%	16	7.2%	5	2.3%	25	11.3%	37	16.7%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table 23. Household Assessments of Change in Any Wild Resource Uses Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed*	CHANGE IN HARVEST/USE*										REASONS FOR LESS**					
		Not in Community		No Response		Higher		Same		Less		Non-Spill		Oil Spill		No Response	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Tatitlek	17	2	11.8%	0	0.0%	6	35.3%	14	82.4%	14	82.4%	5	35.7%	14	100.0%	0	0.0%
Chenega Bay	18	1	5.6%	0	0.0%	8	44.4%	16	88.9%	16	88.9%	4	25.0%	15	93.8%	0	0.0%
Nanwalek	35	0	0.0%	0	0.0%	25	71.4%	31	88.6%	21	60.0%	19	90.5%	7	33.3%	5	23.8%
Port Graham	46	0	0.0%	0	0.0%	35	76.1%	39	84.8%	33	71.7%	25	75.8%	15	45.5%	2	6.1%
Ouzinkie	53	2	3.8%	0	0.0%	45	84.9%	46	86.8%	26	49.1%	23	88.5%	3	11.5%	1	3.8%
Larsen Bay	35	3	8.6%	0	0.0%	26	74.3%	28	80.0%	19	54.3%	15	78.9%	5	26.3%	2	10.5%
Karluk	17	2	11.8%	0	0.0%	12	70.6%	15	88.2%	11	64.7%	11	100.0%	1	9.1%	0	0.0%
TOTAL	221	10	4.5%	0	0.0%	157	71.0%	189	85.5%	140	63.3%	102	72.9%	60	42.9%	10	7.1%

Note: 'No Response' includes those who responded 'Don't Know' and 'No Prior Use.' 'Not in Community' includes those who did not live in the community during the comparison year.

* Percentages based upon the number of household specifying higher, same, or less.

** Percentages based upon the number of households specifying less. Households could respond less for more than a single resource.

SOURCE: Alaska Department of Fish and Game, Divison of Subsistence, Household Surveys, 1991.

Figure 22. Percentage of Households Reporting a Decline in Any Subsistence Resource in 1990/91 Compared to the Year Before (1989), by Region and Type of Reason for Change

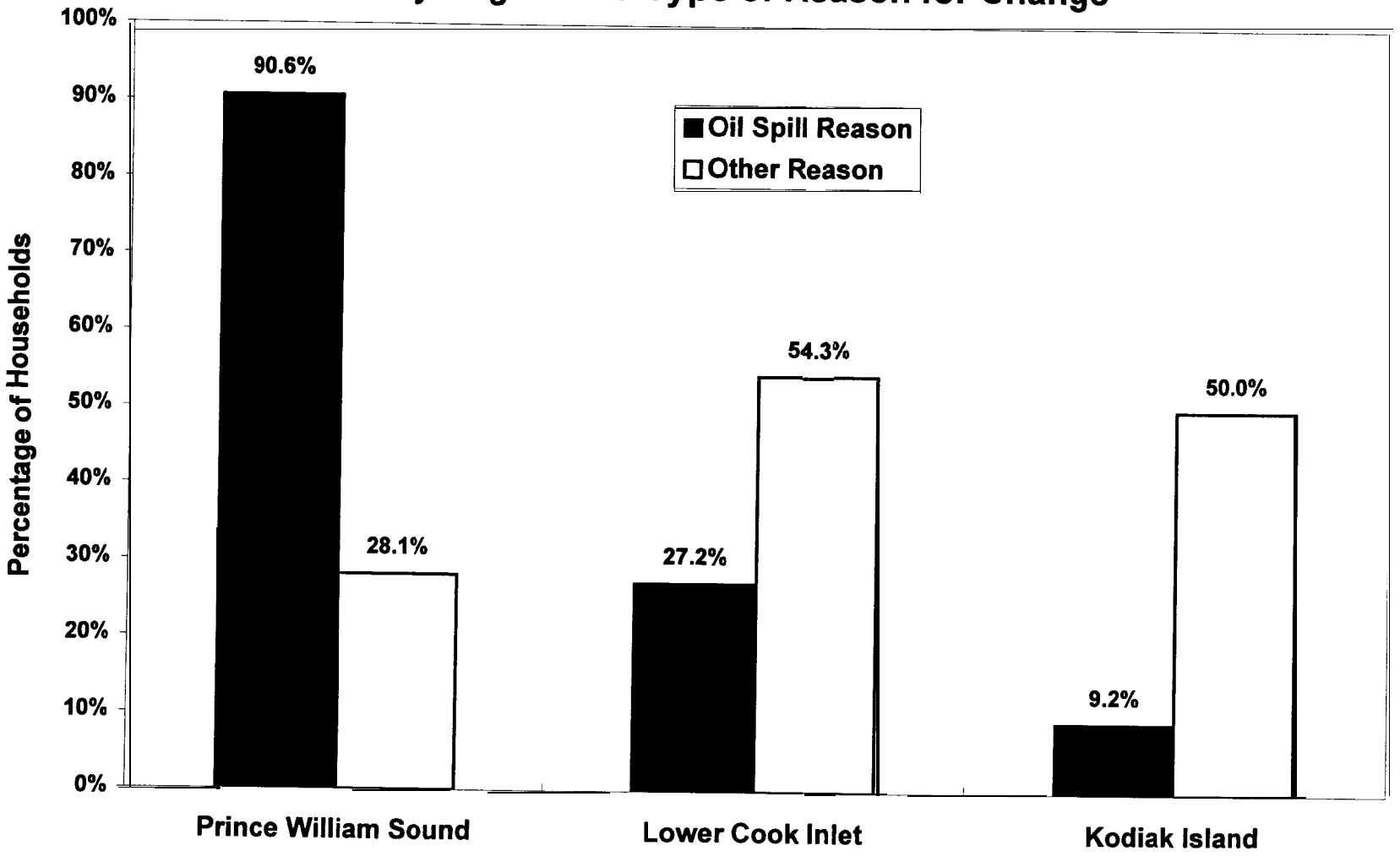


Figure 23. Percentage of Households by Region Which Reported Lowered Use of at Least One Wild Resource Category in the Study Year Compared to the Previous Year Due to Oil Spill Reasons, 1989 and 1990/91

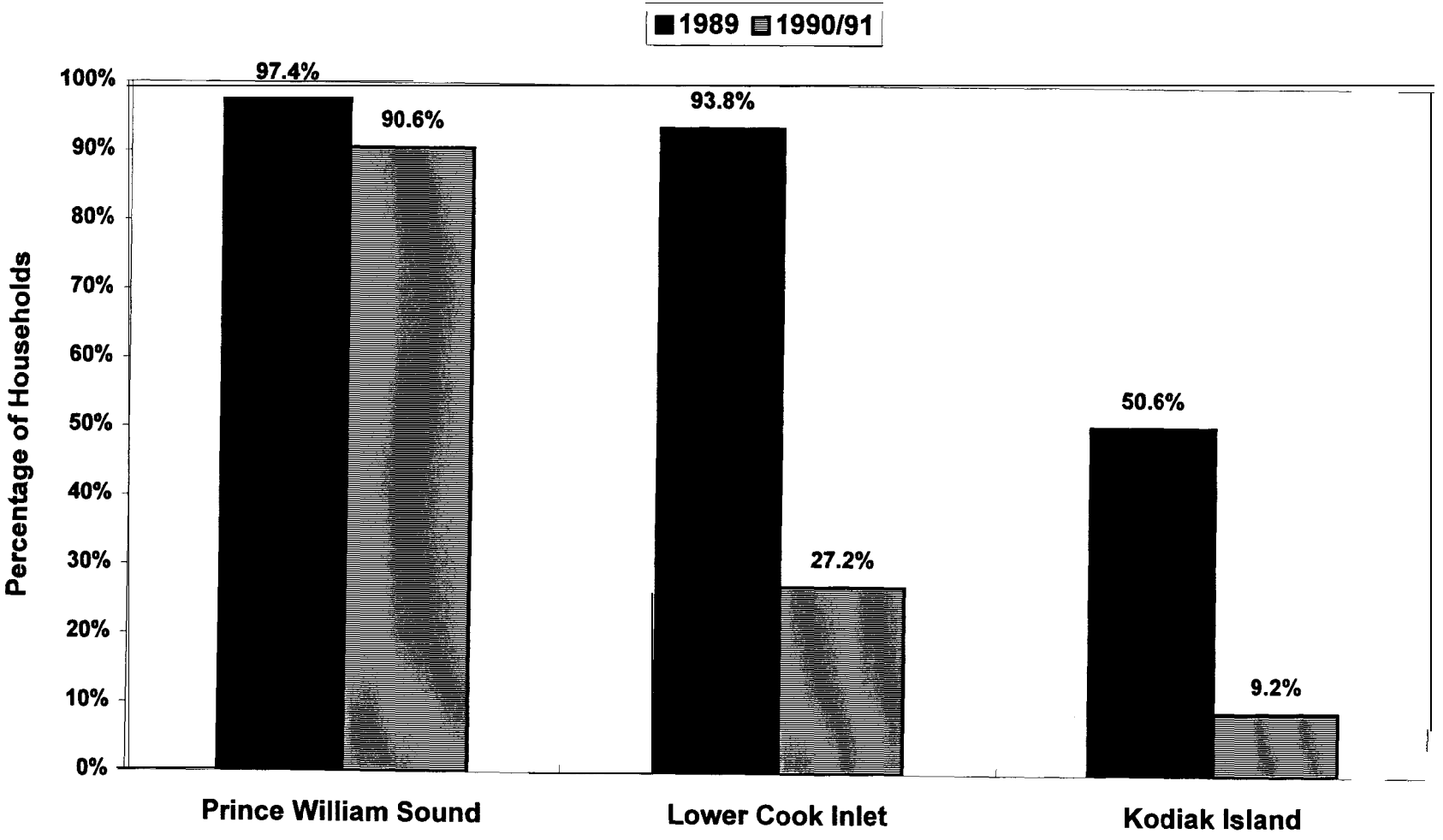


Table 24 reports the percentage of the population of each study community that was involved in fishing, hunting, trapping, and any harvest activity in the 1990/91 study year. As shown in Figure 24, a larger percentage of the population in the Cook Inlet and Kodiak Island Borough villages engaged in subsistence activities during the second year after the spill than in the first post-spill year. Increases in participation were especially notable for Nanwalek and Ouzinkie. On the other hand, the percentage of the population that hunted, fished, or gathered wild foods in Chenega Bay and Tatitlek decreased in 1990/91 compared to the year before. Especially, the percentage that fished in either community declined markedly; this was 42.6 percent in 1989/90 (Fall et al. 1996:85) and 28.9 percent in 1990/91.

CHENEGA BAY

Harvest Levels and Species Used

In the first two years after the resettlement of Chenega Bay in 1984, subsistence harvests averaged 346.6 pounds per person. In the first year, April 1984 - March 1985, subsistence harvests averaged 316.4 pounds per person, while during the second year, April 1985 - March 1986, subsistence harvests increased to 375.1 pounds per person (Stratton and Chisum 1996, Fall et al. 1996, Scott et al. 1997). As shown by previous research (Fall 1991, Fall et al. 1996), in the year following the *Exxon Valdez* oil spill, April 1989 - March 1990, subsistence harvests at Chenega Bay declined by 57.2 percent compared to pre-spill averages to just 148.3 pounds per capita. The estimated per capita harvest for the second year after the spill, April 1990 - March 1991, was 136.8 pounds, a slight additional decline from the previous year. Thus, subsistence harvests in Chenega Bay continued to be substantially below those prior to the spill (Fig. 18). Table 25 provides estimates of harvests and levels of participation in the use of each wild resource and resource category at Chenega Bay for the 1990/91 study year.

These comparisons of estimates of subsistence harvests at Chenega Bay match respondents' own assessments of post-spill harvest and use levels compared to pre-spill norms (Table 19, Table 20). All but two households (87.5 percent) said they believed their overall subsistence uses went down in 1990/91 compared to the first post-spill year. Every Chenega Bay household said its uses remained below pre-spill norms.

Compared to the first year after the spill, Chenega Bay's subsistence harvests of three resource categories increased in the 1990/91 study year (Fig. 25, Fig. 26). Land mammals (primarily deer) increased from 21.5 pounds per capita in 1989/90 (14.5 percent of the total subsistence harvest) to 38.4 pounds per capita in 1990/91 (28.1 percent). However, harvests of land mammals remained well below those reported before the spill. For example, in 1985/86, Chenega Bay residents harvested 78.4 pounds per capita of land mammals for 20.9 percent of the total harvest.

Harvests of marine mammals at Chenega Bay were also up in 1990/91 compared to the year before (Fig. 25, Fig. 26). The study year take of these species (mostly harbor seals and sea lions) was

Table 24. Participation in the Harvest of Wild Resources, Study Communities, 1990/91

ctivity		Chenega Bay	Tatitlek	Nanwalek	Port Graham	Karluk	Larsen Bay	Ouzinkie
Total Number of People		77.0	123.5	183.9	163.8	82.7	145.1	202.6
UNTING FOR MAMMALS OR BIRDS	Number	23.3	24.7	25.8	34.7	20.1	46.9	55.7
	Percentage	30.3	20.0	14.0	21.2	24.3	32.3	27.5
	Missing	0.0	6.6	0.0	0.0	2.2	3.4	1.1
	Missing %	0.0	5.3	0.0	0.0	2.7	2.4	0.6
IGHING FOR FISH OR SHELLFISH	Number	21.0	42.8	126.5	127.9	42.5	92.6	112.4
	Percentage	27.3	34.7	68.8	78.1	51.4	63.8	55.5
	Missing	0.0	4.9	0.0	0.0	2.2	3.4	1.1
	Missing %	0.0	4.0	0.0	0.0	2.7	2.4	0.6
URBEARER HUNTING OR TRAPPING	Number	0.0	6.6	0.0	0.0	0.0	2.3	0.0
	Percentage	0.0	5.3	0.0	0.0	0.0	1.6	0.0
	Missing	0.0	6.6	0.0	0.0	2.2	3.4	1.1
	Missing %	0.0	5.3	0.0	0.0	2.7	2.4	0.6
LANT GATHERING	Number	35.0	65.9	135.9	111.2	57.0	93.7	149.2
	Percentage	45.5	53.3	73.9	67.9	68.9	64.6	73.6
	Missing	0.0	6.6	0.0	0.0	2.2	3.4	1.1
	Missing %	0.0	5.3	0.0	0.0	2.7	2.4	0.6
NY RESOURCE HARVEST ACTIVITY	Number	40.8	77.4	146.4	133.9	61.5	109.7	161.4
	Percent	53.0	62.7	79.6	81.8	74.3	75.6	79.7

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991.

Figure 24. Percentage of Population Engaging in Any Resource Harvest Activity, Study Communities, 1989 and 1990/91

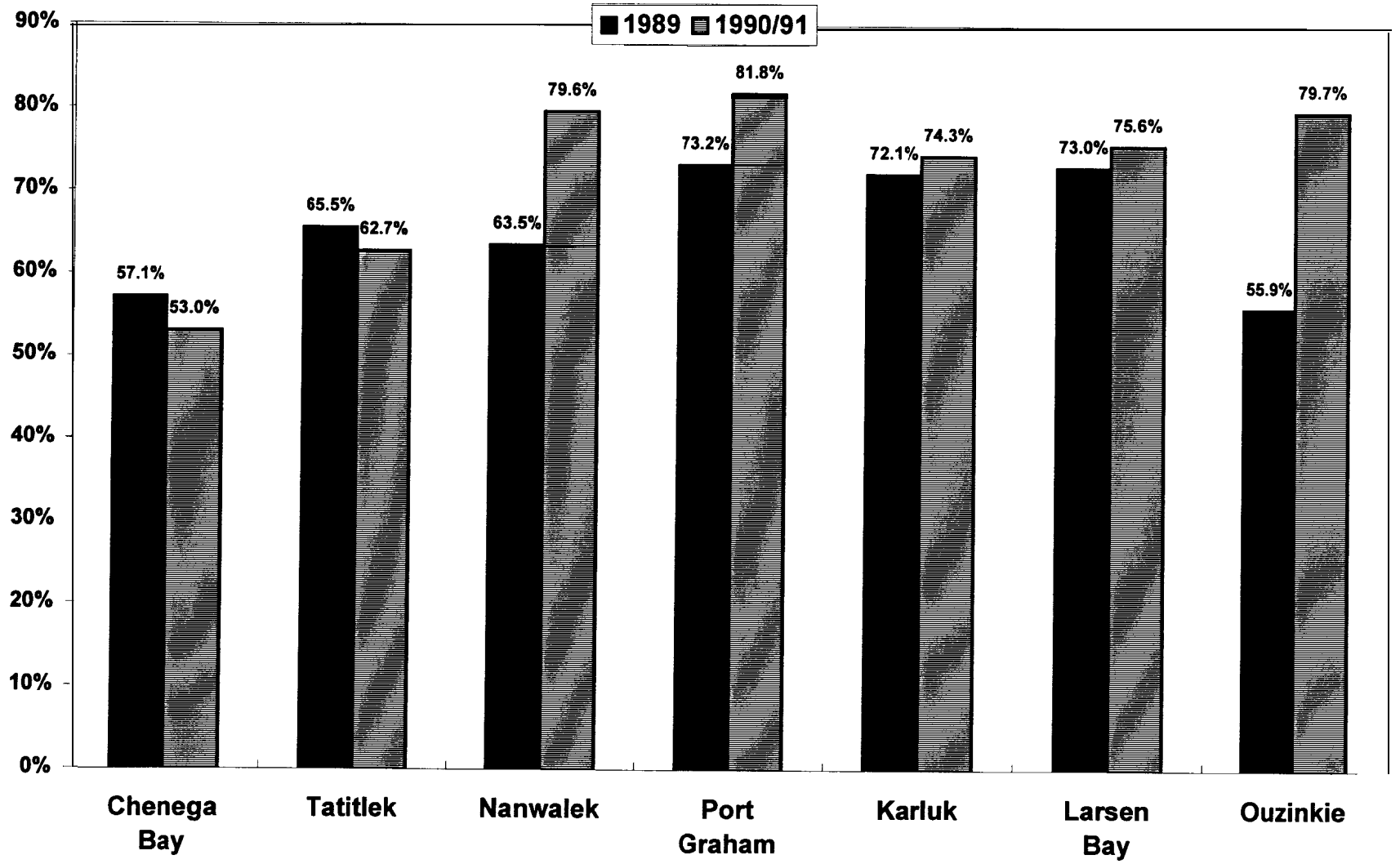


Table 25. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Chenega Bay, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	94.4	94.4	100.0	83.3	10,536.11	501.72	136.83			22.70%	19.70%
Fish	94.4	61.1	61.1	83.3	50.0	4,759.07	226.62	61.81			31.90%	29.40%
Salmon	83.3	61.1	61.1	55.6	38.9	2,846.35	135.54	36.97			34.20%	31.60%
Chum Salmon	33.3	22.2	22.2	16.7	16.7	923.73	43.99	12.00	132.72	6.32	41.20%	38.10%
Coho Salmon	33.3	22.2	22.2	11.1	11.1	314.67	14.98	4.09	46.07	2.19	53.20%	53.80%
Chinook Salmon	27.8	5.6	5.6	22.2	5.6	433.53	20.64	5.63	23.33	1.11	79.70%	79.80%
Pink Salmon	61.1	50.0	50.0	16.7	27.8	580.42	27.64	7.54	265.03	12.62	39.00%	37.20%
Sockeye Salmon	55.6	22.2	22.2	44.4	16.7	579.94	27.62	7.53	128.59	6.12	43.10%	39.00%
Unknown Salmon	5.6	5.6	5.6	0.0	0.0	14.06	0.67	0.18	2.92	0.14	79.70%	77.20%
Non-Salmon Fish	88.9	33.3	33.3	77.8	22.2	1,912.72	91.08	24.84			35.40%	33.60%
Cod	27.8	11.1	11.1	16.7	11.1	36.62	1.74	0.48	11.45	0.55	64.60%	61.40%
Pacific Cod (Gray)	27.8	11.1	11.1	16.7	11.1	36.62	1.74	0.48	11.45	0.55	64.60%	61.40%
Sablefish (Black Cod)	5.6	5.6	5.6	0.0	5.6	28.93	1.38	0.38	9.33	0.44	79.70%	79.80%
Greenling	5.6	11.1	5.6	0.0	5.6	37.33	1.78	0.48	9.33	0.44	79.70%	79.80%
Lingcod	5.6	11.1	5.6	0.0	5.6	37.33	1.78	0.48	9.33	0.44	79.70%	79.80%
Flounder	0.0	5.6	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Halibut	77.8	33.3	33.3	66.7	11.1	1,256.85	59.85	16.32	27.93	1.33	36.60%	35.20%
Herring	50.0	5.6	5.6	44.4	5.6	58.31	2.78	0.76	9.72 gal	0.46	79.70%	77.20%
Herring Roe	11.1	0.0	0.0	11.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Roe on Kelp	27.8	0.0	0.0	27.8	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Rockfish	55.6	22.2	27.8	27.8	11.1	494.67	23.56	6.42	123.67	5.89	41.70%	39.80%
Black Rockfish (black bass)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Red Rockfish	55.6	22.2	27.8	27.8	11.1	494.67	23.56	6.42	123.67	5.89	41.70%	39.80%
Smelt	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00			0.00%	0.00%
Eulachon (Hooligan, Candlefish)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Unknown Smelt	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Trout and Char	0.0	5.6	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Char (general)	0.0	5.6	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lake Trout	0.0	5.6	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Game	94.4	72.2	55.6	55.6	38.9	2,959.13	140.91	38.43			24.50%	23.40%
Big Game	94.4	72.2	55.6	55.6	38.9	2,959.13	140.91	38.43			24.50%	23.40%
Black Bear	38.9	27.8	27.8	16.7	16.7	338.33	16.11	4.39	5.83	0.28	31.20%	30.00%
Caribou	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Deer	94.4	72.2	55.6	55.6	38.9	2,620.80	124.80	34.04	60.67	2.89	24.50%	23.50%

Table 25. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Chenega Bay, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Goat	0.0	11.1	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Moose	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Mammals	83.3	38.9	38.9	66.7	33.3	2,257.10	107.48	29.31			47.20%	45.70%
Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Belukha	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seal	83.3	38.9	38.9	61.1	33.3	2,138.85	101.85	27.78			50.00%	48.60%
Bearded Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Harbor Seal	83.3	38.9	38.9	61.1	33.3	2,138.85	101.85	27.78	56.58	2.69	50.00%	48.60%
Porpoise/Dolphin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Stellar Sea Lion	27.8	5.6	5.6	27.8	5.6	95.50	4.55	1.24	1.17	0.06	79.70%	78.50%
Sea Otter	5.6	5.6	5.6	0.0	0.0	22.75	1.08	0.30	1.17	0.06	79.70%	78.50%
Birds and Eggs	33.3	22.2	22.2	11.1	11.1	43.26	2.06	0.56			46.80%	43.50%
Birds	33.3	22.2	22.2	11.1	11.1	43.26	2.06	0.56			46.80%	43.50%
Upland Game Birds	11.1	11.1	11.1	0.0	5.6	11.43	0.54	0.15	16.33	0.78	68.60%	66.10%
Grouse	11.1	11.1	11.1	0.0	5.6	11.43	0.54	0.15	16.33	0.78	68.60%	66.10%
Ptarmigan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Migratory Birds	22.2	16.7	16.7	11.1	5.6	31.83	1.52	0.41			45.50%	42.20%
Waterfowl	22.2	16.7	16.7	11.1	5.6	31.83	1.52	0.41	29.17	1.39	48.50%	42.20%
Ducks	16.7	16.7	16.7	5.6	5.6	23.43	1.12	0.30	26.83	1.28	50.40%	47.30%
Scoter	5.6	11.1	11.1	0.0	0.0	14.70	0.70	0.19	16.33	0.78	68.60%	65.60%
Goldeneye	11.1	5.6	5.6	5.6	5.6	5.60	0.27	0.07	7.00	0.33	79.70%	77.20%
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mallard	5.6	5.6	5.6	0.0	0.0	1.17	0.06	0.02	1.17	0.06	79.70%	77.20%
Pintail	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Teal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	5.6	5.6	5.6	0.0	0.0	1.96	0.09	0.03	2.33	0.11	79.70%	81.10%
Geese	16.7	11.1	11.1	5.6	0.0	8.40	0.40	0.11	2.33	0.11	54.70%	53.80%
Canada Geese (general)	16.7	11.1	11.1	5.6	0.0	8.40	0.40	0.11	2.33	0.11	54.70%	53.80%
Canada Geese, Dusky	16.7	11.1	11.1	5.6	0.0	8.40	0.40	0.11	2.33	0.11	54.70%	53.80%
Geese, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 25. Estimated Harvests of Fish, Mammal Bird, and Wild Plant R Chenega Bay, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sandhill Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seabirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%	0.00%
Seabird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Waterfowl Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Invertebrates	61.1	33.3	33.3	38.9	22.2	119.71	5.70	1.55			46.10%	43.00%
Clams	38.9	22.2	22.2	16.7	11.1	57.16	2.72	0.74	19.05 gal	0.91	46.20%	42.40%
Butter Clams	11.1	16.7	11.1	0.0	5.6	36.16	1.72	0.47	12.05 gal	0.57	65.20%	62.70%
Razor Clams	27.8	11.1	11.1	16.7	5.6	21.00	1.00	0.27	7.00 gal	0.33	67.00%	64.20%
Cockles	5.6	5.6	5.6	0.0	0.0	3.50	0.17	0.05	1.17 gal	0.06	79.70%	77.20%
Mussels	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Crabs	0.0	16.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Dungeness Crab	0.0	16.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
King Crab	0.0	5.6	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tanner Crab	0.0	5.6	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Chitons (bidarkis)	11.1	11.1	11.1	5.6	5.6	1.35	0.06	0.02	0.34 gal	0.02	57.60%	56.40%
Chitons (small)	11.1	11.1	11.1	5.6	5.6	1.35	0.06	0.02	0.34 gal	0.02	57.60%	56.40%
Octopus	38.9	22.2	22.2	22.2	11.1	42.00	2.00	0.55	10.50	0.50	46.90%	45.30%
Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Shrimp	22.2	16.7	16.7	5.6	5.6	15.70	0.75	0.20	7.85 gal	0.37	60.00%	57.00%
Plants and Berries	66.7	66.7	66.7	5.6	11.1	397.83	18.94	5.17	99.46 gal	4.74	43.10%	41.00%
Berries	66.7	66.7	66.7	5.6	11.1	248.50	11.83	3.23	62.13 gal	2.96	25.10%	24.20%
Plants/Greens/Mushrooms	5.6	5.6	5.6	0.0	0.0	149.33	7.11	1.94	37.33 gal	1.78	79.70%	77.20%
Wood	94.4	94.4	94.4	77.8	83.3	0.00	0.00	0.00	151.08 crd	7.19	30.60%	0.00%

SOURCE: Alaska Department of Fish and Game, Subsistence, Household Survey, 1991

Figure 25. Subsistence Harvests by Resource Category, Pounds Usable Weight per Capita, Chenega Bay

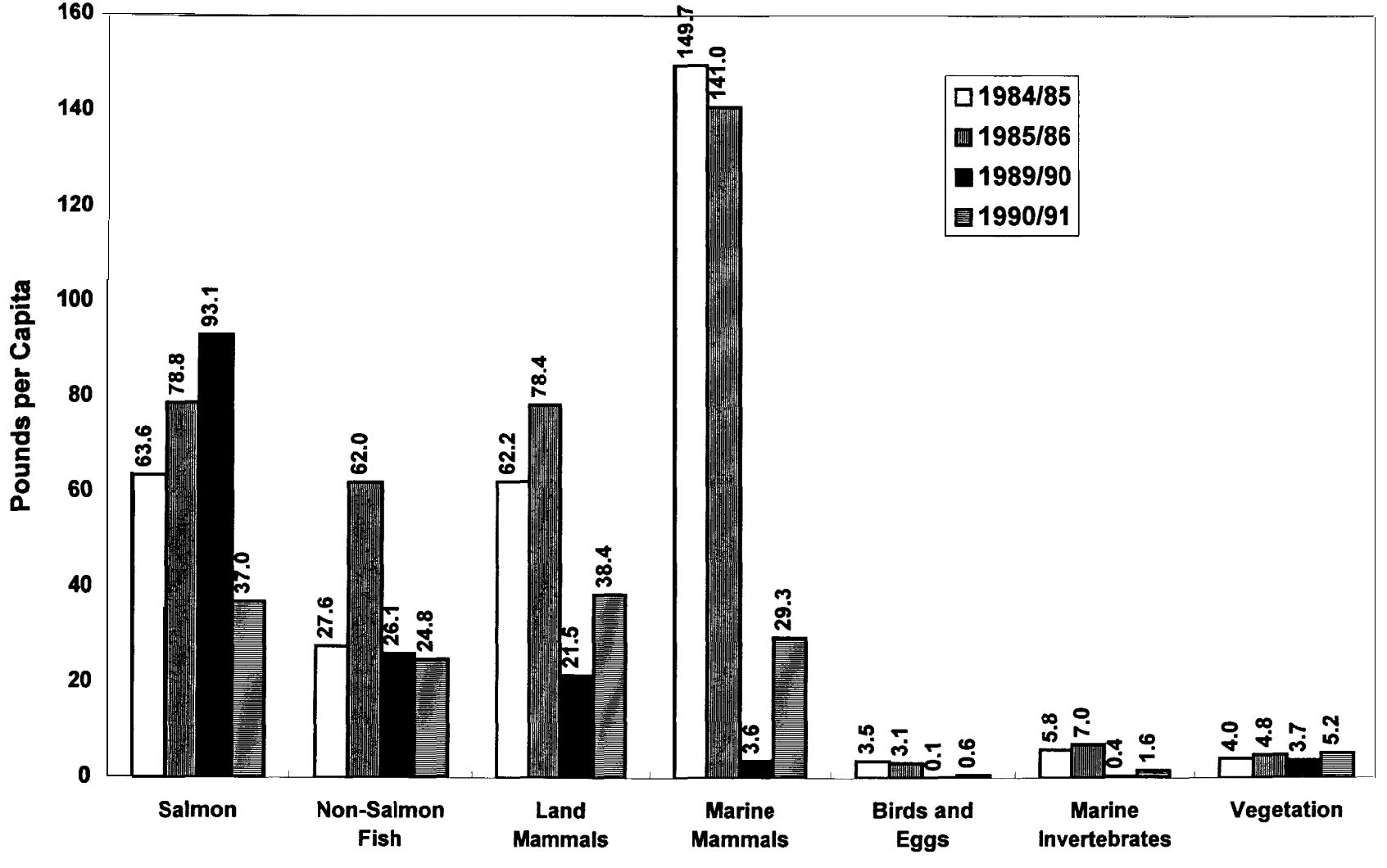
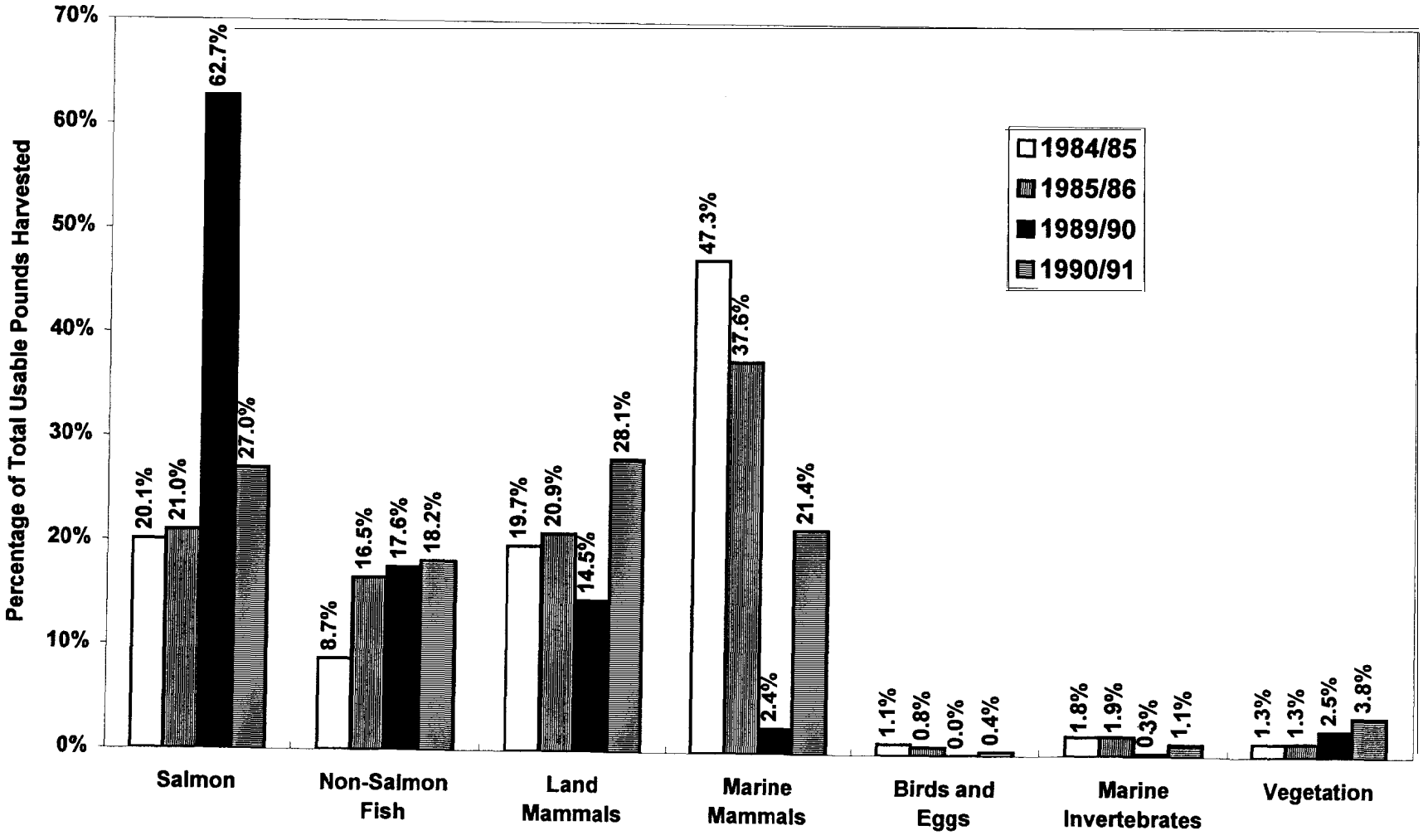


Figure 26. Percentage of Total Subsistence Harvest by Resource Category, Chenega Bay



29.3 pounds per person for 21.4 percent of the total harvest, compared to just 3.6 pounds per person and 2.4 percent of the harvest in 1989/90. However, before the spill, marine mammals made up the largest portion of Chenega Bay's subsistence harvest. In 1985/86, for example, the village harvested 141.0 pounds of harbor seals and sea lions for 37.6 percent of the total subsistence take. Thus, even more so than with land mammals, Chenega Bay's harvests of marine mammals in the 1990/91 study year remained relatively low.

The third category which showed an increase in harvest at Chenega Bay in 1990/91 was wild plants, rising to 5.2 pounds per person and 3.8 percent of the harvest from 3.7 pounds per person and 2.5 percent of the harvest in the first post-spill year. This was the only category which showed an increase over pre-spill years (although the difference was very small).

In contrast to land mammals, marine mammals, and plants, subsistence harvests of salmon at Chenega Bay were markedly lower in 1990/91 than the year before. For the 1990/91study year, salmon harvests averaged 37.0 pounds per person (27.0 percent) compared to 93.1 pounds (62.7 percent) in 1989/90. Salmon harvests in the 1990/91 study year were also lower than pre-spill estimates. For example, in 1985/86, Chenega Bay residents harvested 78.8 pounds of salmon per person for 21.1 percent of their resource total. As discussed in Fall et al. (1996), salmon harvests at Chenega Bay in the first two years of its resettlement were probably lower than those of the year just prior to the spill because regulatory changes eliminated restrictive subsistence fishing rules in 1988. (For the effects of this regulatory change on Tatitlek's subsistence salmon harvests, see Stratton (1990:92-98)).

A possible explanation for the decline in salmon harvests at Chenega Bay in 1990/91 compared to the year before is that in 1989, some areas that are normally closed to subsistence salmon fishing near Chenega Bay were boomed-off to protect returns of salmon. These areas were opened to subsistence fishing by emergency order by ADF&G to enable subsistence fishermen to harvest salmon without concern that the fish or their gear would be contaminated. A large portion of Chenega Bay's 1989/90 salmon harvest came from these protected places. However, these areas were again closed to subsistence fishing in 1990 (Fall et al. 1996).

Finally, three resource categories showed virtually no change in harvest levels compared to 1989/90 and remained depressed compared to pre-spill levels as well (Fig. 25, Fig. 26). Harvests of fish other than salmon averaged 24.8 pounds per person (18.2 percent) in 1990/91 and 26.1 pounds per person (17.6 percent) in 1989/90, compared to 62.0 pounds per person (16.5 percent) in 1985/86. Similarly, per capita harvests of marine invertebrates were 1.6 pounds in 1990/91 (1 .1 percent) and 0.4 pounds in 1989/90 (0.3 percent), well below the 7.0 pounds per person (1.9 percent) recorded for 1985/86. The birds and eggs category also remained relatively low with a harvest of 0.6 pounds per person in 1990/91 (0.4 percent) and 0.1 pounds (less than 0.1 percent) in 1989/90, compared to 3.1 pounds (0.8 percent) in 1985/86.

In summary, compared to the first post-spill year, harvests of land mammals, marine mammals, and plants were up at Chenega Bay in 1990/91, harvests of salmon were notably down, and harvests of other fish, marine invertebrates, and birds and eggs were virtually unchanged. Compared to the pre-spill years of 1984/85 and 1985/86, harvests of all categories of resources except plants remained low in 1990/91, continuing the post-oil spill pattern.

The range of resources used and harvested in Chenega Bay in 1990/91 was up only slightly compared to the year before, and remained much lower than pre-spill estimates (Figure 27). For example, on average, Chenega Bay households used 9.8 kinds of wild foods in 1990/91 (adjusted values), compared to 7.2 kinds the year before, but 16.9 kinds in 1984/85 and 20.6 kinds in 1985/86. Similarly, Chenega Bay households harvested 5.4 kinds of wild resources on average in 1990/91, compared to 5.1 kinds in 1989/90 and 13.7 kinds in 1985/86. The range of resources received in 1990/91 was also up only slightly compared to the first post-spill year, while the average number of resources given away dropped slightly.

Levels of Participation

As in previous study years, in 1990/91 every household in Chenega Bay used wild resources. In addition, most attempted to harvest (94.4 percent), harvested (94.4 percent), received (100 percent), and gave away (83.3 percent) wild foods (Table 17). As discussed in Fall et al. (1996), there were four categories of wild resources used by substantially fewer households in Chenega Bay in the year following the spill. These were: fish other than salmon (down from 93.8 percent in 1985/86 to 66.7 percent in 1989/90), marine invertebrates (down from 93.8 percent to 22.2 percent), marine mammals (down from 81.3 percent to 38.9 percent), and birds and eggs (down from 75 percent to 5.6 percent). In 1990/91, the percentage of households using two of these categories rebounded to approximate pre-spill levels (Fig. 28). These were other fish (88.9 percent using) and marine mammals (83.3 percent using). The percentage of households using marine invertebrates (61.1 percent) and birds and eggs (33.3 percent) also increased over 1989/90, but remained below that of 1985/86 (93.8 percent and 75.0 percent, respectively).

As in pre-spill years as well as the first spill year, most households at Chenega Bay used salmon (83.3 percent) and land mammals (94.4 percent) in 1990/91. The only resource category which showed a decline in the percentage of households using was edible wild plants (berries), down to 66.7 percent compared to 72 percent in 1989/90 and 94 percent in 1985/86. (Data in Figure 28 include wood.)

As shown in Table 20, 53 percent of Chenega Bay's population engaged in subsistence activities during the study year, compared to 57.1 percent the year before (Fig. 24). This was the lowest level of the seven study villages, but similar to Tatitlek's 58.7 percent. Compared to the first post-spill year, participation in fishing declined by half, from 44.4 percent in 1989/90 to 22.7 percent in 1990/91.

Figure 27. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Chenega Bay

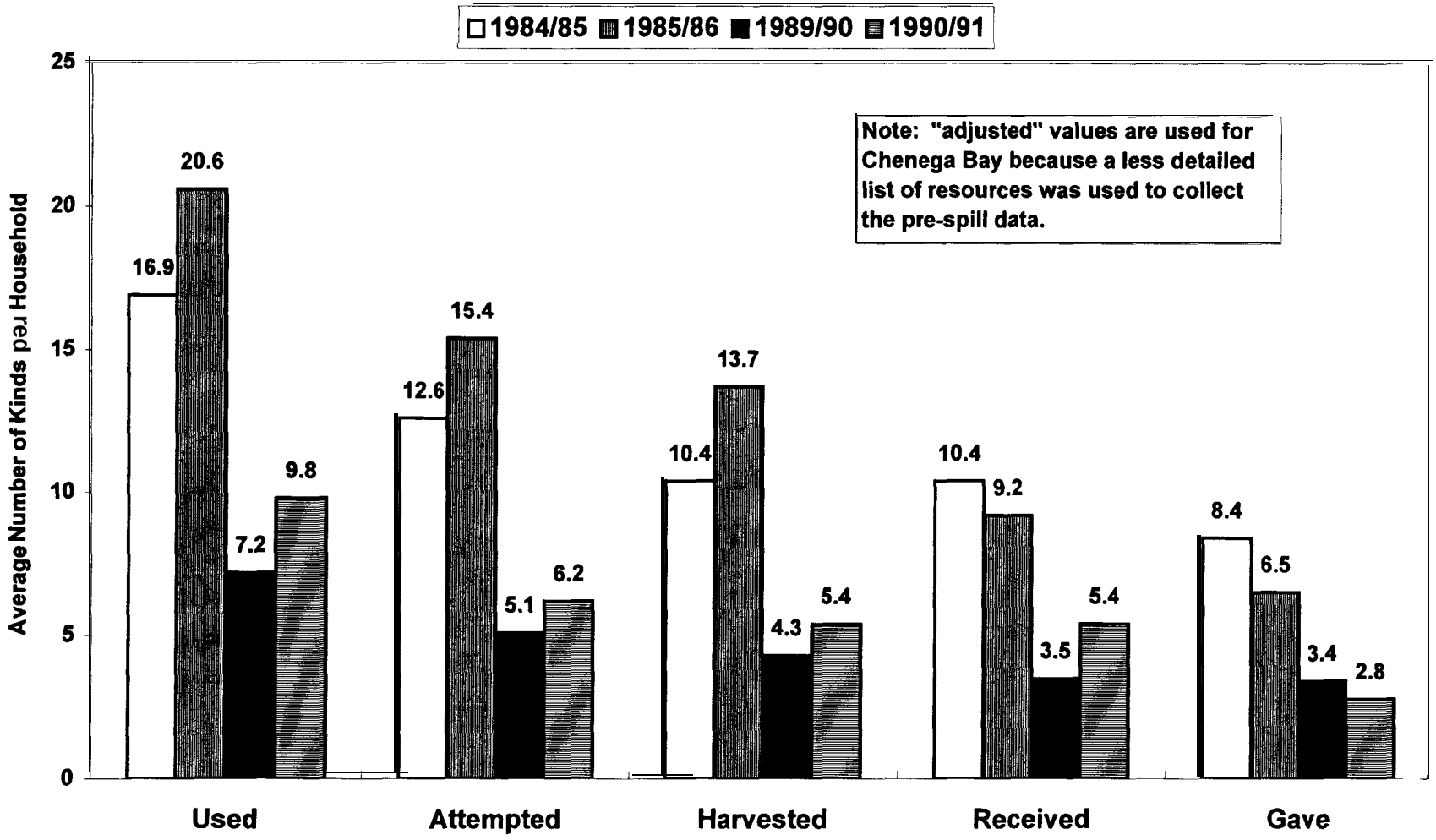
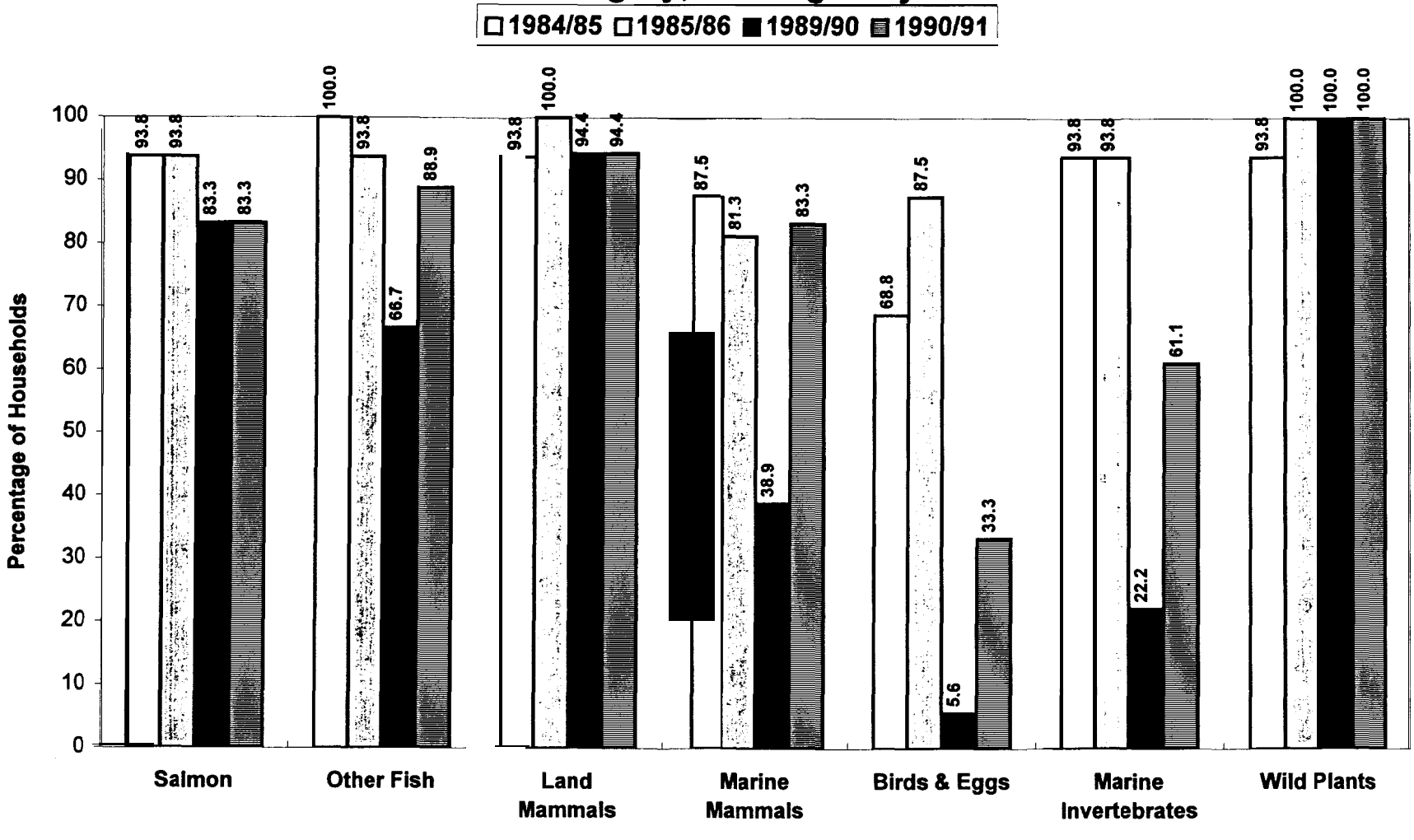


Figure 28. Percentage of Households Using Wild Resources by Category, Chenega Bay



Participation in hunting stayed about the same, while participation in gathering went up by about 10 percent.

Assessments of Change[1]

Concerns about hydrocarbon contamination of subsistence foods due to the *Exxon Valdez* oil spill remained very strong in Chenega Bay in the second year after the spill, which to a large degree accounted for the continued low level of subsistence harvests in the village. As noted above (Table 19), most Chenega Bay households (88.2 percent) said that, overall, their subsistence uses were down in 1990/91 even compared to the first post-spill year. The large majority of households (88.9 percent) had lower uses of at least one category of resources and virtually of these households (93.8 percent) cited the spill as a reason for the decline(Table 23). All Chenega Bay respondents said that their subsistence uses were lower than before the spill (Table 20) and a large majority (88.2 percent) cited contamination concerns as the cause (Table 22). For example, regarding fish other than salmon, a Chenega Bay respondent said,

> [I caught] a lot less. I usually fish a lot, but I don't want to eat the fish from around here and then find out later that there was something wrong with them and I shouldn't have.

Another household continued to rely on their relatives in Cordova to supply them with fish, but they received less in 1990/91 than the year before because of less frequent plane service to the village. On the other hand, another family said that they harvested more fish than the year before because, "The water was cleaner."

Shellfish harvests remained low, according to respondents from Chenega Bay, for much the same reasons as the first year after the spill -- concerns about edibility and relative scarcity. One person said that

> [Shellfish harvests] were less than last year. Nobody got any around here. Some people went up to Anchorage. I don't even go down to the beach.

Some other households also traveled great distances for shellfish:

> This year, I got clams from Clam Gulch. I couldn't find clams around here. I didn't even try the year before.
>
> We got some razor clams from near Cordova. We weren't even able to find enough to make chowder. We had to add a can of clams. . . We're not even trying to harvest shellfish near the village because of oil. It took four days to get 18 shrimp. We tried to get crab, but we were unsuccessful.

[1] This section, and the ones that follow for the other study communities, contain some representative household comments about changes in subsistence uses in 1990191. See also Appendix J.

According to comments from respondents, harvests of birds and marine mammals also remained depressed because of contamination concerns and population declines.

> I have seen blind seals near the village. I normally harvest sea mammals, but I don't want to take them now.

> I got more ducks than the year before, [but] they're more scarce now [than before the spill]. They don't come around like they used to. We have to go farther to find them. There is more traffic around here now. People working on the spill. That scares the birds off.

TATITLEK

Harvest Levels and Species Used

Subsistence harvest levels in Tatitlek in 1990/91 continued a downward trend which began in the year after the *Exxon Valdez* oil spill. As expressed in pounds usable weight per capita, subsistence harvests in Tatitlek averaged 152.7 pounds in 1990/91 compared with 214.8 pounds in 1989/90, 643.5 pounds in 1988/89, and 352.5 pounds in 1987/88 (Fig. 18). The average of the two pre-spill study years of 1987/88 and 1988/89 was 483.4 pounds of subsistence foods per person.[2]

As at Chenega Bay, Tatitlek respondents were almost unanimous in their assessments of overall levels of subsistence uses in 1990/91 compared to other years (Table 19, Table 20). Almost all (93.3 percent) said their uses had declined compared to the year before, and the same percentage said their use quantities remained below pre-spill levels.

Compared to the year before, only two categories of wild foods, fish other than salmon and wild plants, showed a substantial increase in harvest at Tatitlek in 1990/91 (Table 26, Fig. 29, Fig. 30). Other fish increased from 16.9 pounds per person (7.9 percent) to 39.5 pounds (25.8 percent), but remained well below pre-spill estimates of 81.0 pounds (23.0 percent) for 1987/88 and 88.0 pounds (13.7 percent) for 1988/89. Harvests of wild plants also increased, from 5.7 pounds per person in 1989/90 to 7.2 pounds in 1990/91. The latter harvest still below pre-spill estimates of 9.3 pounds per person of wild plants in 1987/88 and the 1988/89 harvest of 17.3 pounds per person.

Harvests of every other category of wild foods at Tatitlek dropped in 1990/91 or stayed virtually unchanged compared to the first year after the spill and remained very low compared to pre-spill estimates (Fig. 29, Fig. 30). Harvests of salmon declined to 59.7 pounds per person (39.1 percent) from 95.8 pounds (44.6 percent) in 1989/90, still well below the 260.9 pounds per person harvest of 1988/89 (40.5 percent). While harvests of marine invertebrates rose slightly from 0.8 pounds per person in 1989/90 to

[2] See Stratton 1990:78-87 for a discussion of reasons for the differences between harvest estimates for Tatitlek in 1987/88 and 1988/89. The primary causes for the higher estimate in 1988189 were changes in subsistence salmon regulations, a more complete sampling of active households for the 1988189 survey, better availability of equipment, and better health for some key harvesters.

Table 26. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Tatitlek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	100.0	100.0	82.4	88.2	18,863.04	673.68	152.70			48.60%	50.50%
Fish	94.1	94.1	94.1	76.5	76.5	12,252.34	437.58	99.19			49.40%	51.40%
Salmon	94.1	82.4	82.4	58.8	58.8	7,377.18	263.47	59.72			47.30%	48.90%
Chum Salmon	41.2	23.5	23.5	23.5	11.8	1,152.08	41.15	9.33	165.53	5.91	79.10%	82.80%
Coho Salmon	88.2	76.5	76.5	41.2	52.9	3,768.55	134.59	30.51	551.76	19.71	49.50%	51.70%
Chinook Salmon	23.5	0.0	0.0	23.5	5.9	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Pink Salmon	52.9	47.1	47.1	17.6	23.5	779.12	27.83	6.31	355.76	12.71	53.50%	52.70%
Sockeye Salmon	35.3	17.6	11.8	35.3	5.9	81.71	2.92	0.66	18.12	0.65	91.40%	90.90%
Unknown Salmon	11.8	5.9	5.9	5.9	5.9	1,595.70	56.99	12.92	331.06	11.82	132.90%	132.20%
Non-Salmon Fish	88.2	76.5	76.5	76.5	64.7	4,875.16	174.11	39.47			65.80%	67.80%
Cod	52.9	5.9	5.9	47.1	17.6	158.12	5.65	1.28	49.41	1.76	132.90%	134.10%
Pacific Cod (Gray)	52.9	5.9	5.9	47.1	17.6	158.12	5.65	1.28	49.41	1.76	132.90%	134.10%
Sablefish (Black Cod)	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Greenling	17.6	0.0	0.0	17.6	5.9	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lingcod	17.6	0.0	0.0	17.6	5.9	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Halibut	64.7	29.4	29.4	41.2	41.2	882.00	31.50	7.14	19.60	0.70	56.20%	58.60%
Herring	47.1	23.5	23.5	35.3	23.5	1,860.35	66.44	15.06	310.06 gal	11.07	126.70%	127.80%
Herring Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Roe on Kelp	64.7	58.8	58.8	17.6	35.3	1,389.99	49.64	11.25	198.57 gal	7.09	59.30%	61.00%
Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Rockfish	47.1	17.6	17.6	35.3	11.8	555.88	19.85	4.50	164.71	5.88	77.60%	86.40%
Black Rockfish (black bass)	11.8	11.8	11.8	5.9	5.9	61.76	2.21	0.50	41.18	1.47	93.00%	95.20%
Red Rockfish	47.1	17.6	17.6	35.3	11.8	494.12	17.65	4.00	123.53	4.41	91.20%	93.10%
Smelt	11.8	0.0	0.0	11.8	5.9	0.00	0.00	0.00			0.00%	0.00%
Eulachon (Hooligan, Candlefish)	11.8	0.0	0.0	11.8	5.9	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Unknown Smelt	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Trout and Char	11.8	5.9	5.9	5.9	5.9	28.82	1.03	0.23	20.59	0.74	132.90%	132.20%
Char (general)	11.8	5.9	5.9	5.9	5.9	28.82	1.03	0.23	20.59	0.74	132.90%	132.20%
Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lake Trout	11.8	5.9	5.9	5.9	5.9	28.82	1.03	0.23	20.59	0.74	132.90%	132.20%
Game	88.2	70.6	58.8	52.9	41.2	2,158.96	77.11	17.48			39.40%	41.80%
Big Game	88.2	70.6	58.8	52.9	41.2	2,158.96	77.11	17.48			39.40%	41.80%
Black Bear	11.8	11.8	5.9	5.9	0.0	95.53	3.41	0.77	1.65	0.06	132.90%	132.20%
Caribou	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 26. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Tatitlek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Deer	88.2	70.6	58.8	52.9	41.2	2,063.44	73.69	16.70	47.76	1.71	38.20%	41.00%
Goat	0.0	23.5	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Moose	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	11.8	11.8	11.8	0.0	5.9	0.00	0.00	0.00	16.47	0.59	107.90%	0.00%
Land Otter	11.8	11.8	11.8	0.0	5.9	0.00	0.00	0.00	14.82	0.53	118.10%	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mink	5.9	5.9	5.9	0.0	0.0	0.00	0.00	0.00	1.65	0.06	132.90%	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Mammals	82.4	29.4	29.4	70.6	41.2	2,998.73	107.10	24.28			89.30%	90.40%
Whale	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Belukha	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seal	82.4	29.4	29.4	64.7	41.2	2,863.91	102.28	23.18			87.50%	88.60%
Bearded Seal	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Harbor Seal	82.4	29.4	29.4	64.7	41.2	2,863.91	102.28	23.18	75.76	2.71	87.50%	88.60%
Porpoise/Dolphin	11.8	5.9	0.0	11.8	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Stellar Sea Lion	47.1	5.9	5.9	41.2	17.6	134.83	4.82	1.09	1.65	0.06	132.90%	134.10%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Birds and Eggs	82.4	52.9	52.9	52.9	29.4	325.61	11.63	2.64			50.50%	53.60%
Birds	58.8	35.3	29.4	35.3	17.6	224.89	8.03	1.82			68.20%	70.90%
Upland Game Birds	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Grouse	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ptarmigan	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Migratory Birds	58.8	35.3	29.4	35.3	17.6	224.89	8.03	1.82			68.20%	70.90%
Waterfowl	58.8	35.3	29.4	35.3	17.6	224.89	8.03	1.82	186.12	6.65	76.60%	70.90%
Ducks	52.9	35.3	29.4	29.4	17.6	132.98	4.75	1.08	160.59	5.74	84.10%	86.80%
Scoter	29.4	23.5	17.6	11.8	17.6	50.40	1.80	0.41	56.00	2.00	98.50%	101.60%
Goldeneye	23.5	23.5	17.6	5.9	11.8	48.75	1.74	0.39	60.94	2.18	108.30%	111.60%
Bufflehead	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Merganser	23.5	17.6	11.8	11.8	5.9	13.84	0.49	0.11	23.06	0.82	92.00%	94.90%
Mallard	17.6	23.5	17.6	0.0	11.8	17.29	0.62	0.14	17.29	0.62	96.50%	97.40%
Pintail	5.9	11.8	5.9	0.0	5.9	1.32	0.05	0.01	1.65	0.06	132.90%	132.20%
Teal	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	17.6	5.9	5.9	11.8	5.9	1.38	0.05	0.01	1.65	0.06	132.90%	132.20%

Table 26. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Tatitlek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Geese	29.4	29.4	23.5	5.9	11.8	91.91	3.28	0.74	25.53	0.91	86.60%	87.00%
Canada Geese (general)	29.4	29.4	23.5	5.9	11.8	74.12	2.65	0.60	20.59	0.74	77.50%	78.30%
Canada Geese, Dusky	29.4	29.4	23.5	5.9	11.8	74.12	2.65	0.60	20.59	0.74	77.50%	78.30%
Geese, Unknown	5.9	5.9	5.9	0.0	0.0	17.79	0.64	0.14	4.94	0.18	132.90%	132.20%
Crane	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sandhill Crane	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seabirds	5.9	5.9	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Cormorants	5.9	5.9	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eggs	52.9	41.2	41.2	29.4	11.8	100.72	3.60	0.82			50.60%	52.60%
Seabird Eggs	52.9	41.2	41.2	29.4	11.8	100.72	3.60	0.82	532.00	19.00	54.70%	52.60%
Gull Eggs	52.9	41.2	41.2	29.4	11.8	88.94	3.18	0.72	296.47	10.59	49.80%	51.70%
Tern Eggs	29.4	23.5	23.5	17.6	5.9	11.78	0.42	0.10	235.53	8.41	66.20%	68.50%
Waterfowl Eggs	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00			0.00%	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Geese Eggs	0.0	5.9	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Invertebrates	64.7	70.6	58.8	41.2	23.5	237.98	8.50	1.93			50.10%	48.10%
Clams	47.1	35.3	35.3	23.5	0.0	64.43	2.30	0.52	21.48 gal	0.77	62.90%	63.30%
Butter Clams	47.1	35.3	35.3	23.5	0.0	64.43	2.30	0.52	21.48 gal	0.77	62.90%	63.30%
Razor Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Cockles	17.6	17.6	17.6	0.0	0.0	11.71	0.42	0.09	3.90 gal	0.14	92.30%	86.70%
Mussels	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Crabs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Dungeness Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
King Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Chitons (bidarkis)	41.2	41.2	35.3	17.6	23.5	105.41	3.76	0.85	26.35 gal	0.94	69.00%	65.10%
Chitons (small)	41.2	41.2	35.3	17.6	23.5	105.41	3.76	0.85	26.35 gal	0.94	69.00%	65.10%
Octopus	29.4	41.2	17.6	17.6	11.8	56.00	2.00	0.45	14.00	0.50	72.10%	74.00%
Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Shrimp	5.9	5.9	5.9	0.0	0.0	0.43	0.02	0.00	0.21 gal	0.01	132.90%	132.20%
Plants and Berries	88.2	82.4	82.4	17.6	52.9	889.41	31.76	7.20	222.35 gal	7.94	29.80%	31.10%
Berries	88.2	82.4	82.4	17.6	52.9	889.41	31.76	7.20	222.35 gal	7.94	29.80%	31.10%
Plants/Greens/Mushrooms	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Wood	88.2	82.4	82.4	35.3	29.4	0.00	0.00	0.00	130.28 crd	4.65	38.40%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Figure 29. Subsistence Harvests by Resource Category, Pounds Usable Weight per Capita, Tatitlek

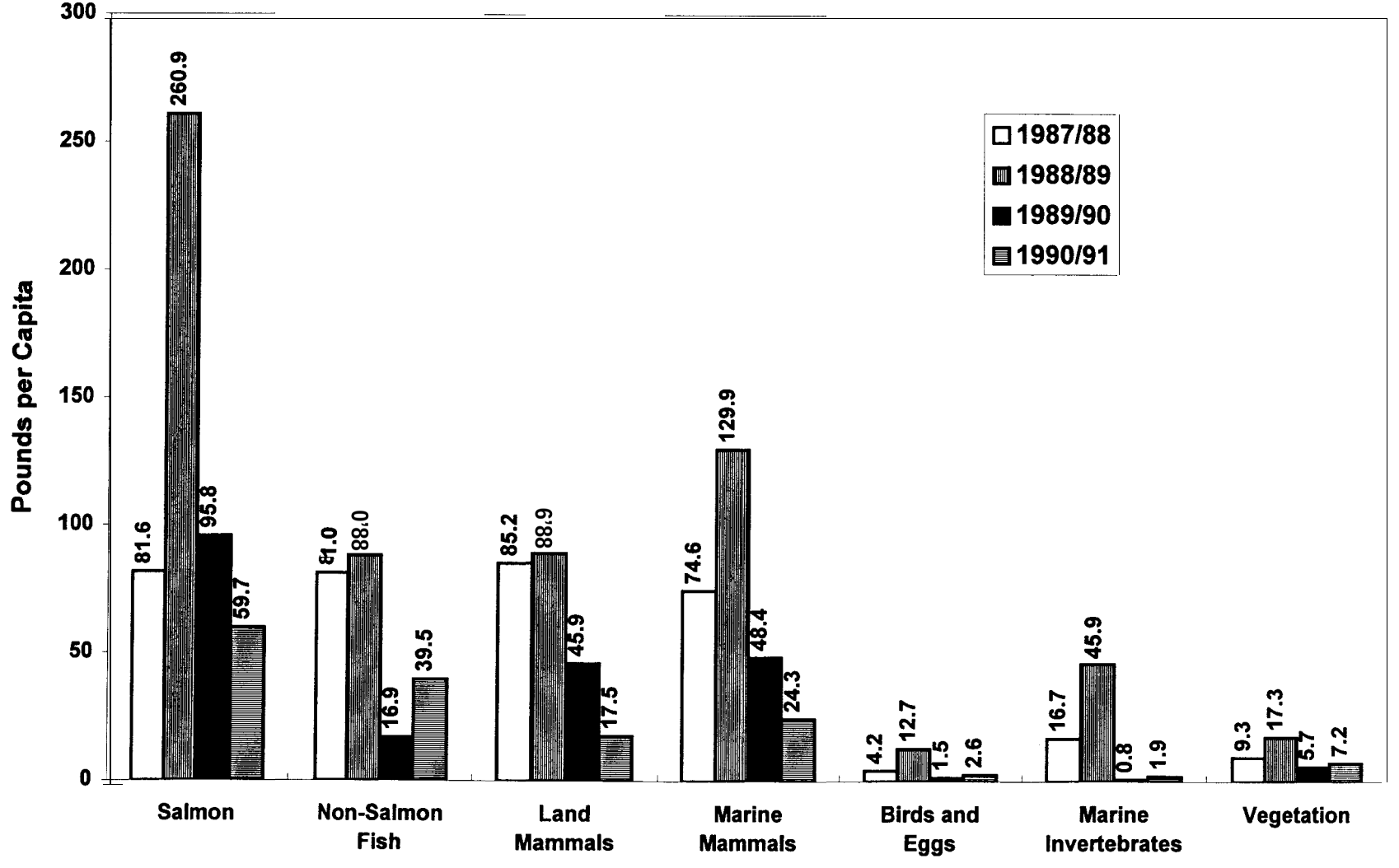
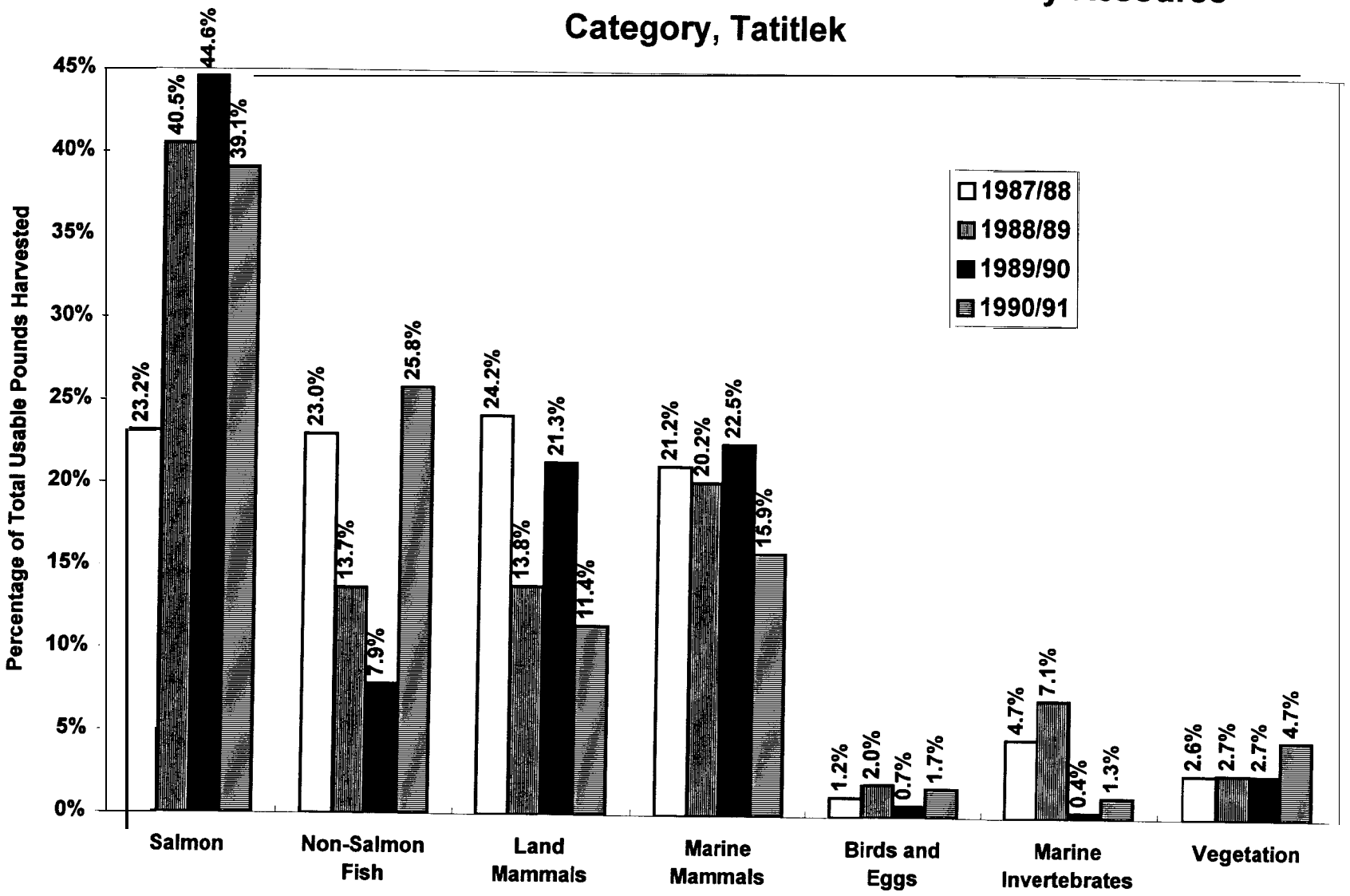


Figure 30. Percentage of Total Subsistence Harvest by Resource Category, Tatitlek



1.9 pounds in 1990/91, pre-spill harvests were much higher, at 16.7 pounds in 1987/88 (4.7 percent) and 45.9 pounds in 1988/89 (7.1 percent). This same pattern held for birds and eggs. There was a slight increase to 2.6 pounds per person in 1990/91 over the 1.5 pounds of the year before. However, pre-spill harvest levels averaged 4.2 pounds of birds and eggs per person in 1987/88 and 12.7 pounds in 1988/89. Pre-spill estimates of land mammal harvests at Tatitlek were similar to each other at 85.2 pounds per person (24.2 percent) and 88.9 pounds per person (13.8 percent) for 1987/88 and 1988/89 respectively. These dropped to 45.9 pounds in the first year after the spill (21.3 percent) and further to just 17.5 pounds in the second year (11.4 percent). Finally, marine mammal harvests, a staple of the diet of many Tatitlek households, continued their downward trend in 1990/91. Pre-spill harvests averaged 74.6 pounds per person in 1987/88 (21.2 percent) and 129.9 pounds in 1988/89 (20.2 percent). In contrast, post-spill levels were 48.4 pounds per person in 1989/90 (22.5 percent) and 24.2 pounds per person in 1990/91 (15.9 percent).

As with Chenega Bay, there were small increases in the range of resources used and harvested by Tatitlek households in 1990/91 compared to the year before, but these remained much below pre-spill averages (Fig. 31). On average, Tatitlek households used 14.4 kinds of wild foods in 1990/91, compared to 11.6 types in 1989/90, 22.6 types in 1988/89, and 19.6 types in 1987/88 (unadjusted values). The average number of kinds of resources harvested by Tatitlek households increased from 7.0 in 1989/90 to 8.8 in 1990/91, but was still lower than the average of 11.7 per household in 1987/88 and 13.7 per household in 1988/89. Fewer kinds of resources were shared by Tatitlek households in the two post-spill years compared to pre-spill averages, although the average number of resources received (7.9) and given away (5.7) were up slightly in 1990/91 over the year before.

Levels of Participation

As shown in Figure 32, the percentage of Tatitlek's households which used fish other than salmon, marine invertebrates, and birds and eggs dropped in the first year after the spill. The percentage using these categories bounced back up in 1990/91, although participation in the use of marine invertebrates (64.7 percent using) remained below pre-spill levels of 100 percent in 1987/88 and 95 percent in 1988/89. Other resource categories do not show much variation over the four study years, although the percentage of households using marine mammals declined slightly each year after the spill.

The percentage of Tatitlek's population which hunted, fished, or gathered wild resources in 1990/91 was 58.7 percent, down from 65.5 percent the year before (Fig. 24, Table 24). This percentage was similar to that of Chenega Bay (which also declined from 1989/90) and was lower than the other five study communities (all of which increased over the previous year). As with Chenega Bay, the percentage of Tatitlek's population which fished decreased, from 41.4 percent in 1989/90 to 31.0 percent in 1990/91. The percentage which hunted remained about the same and the percentage which gathered was up slightly.

Figure 31. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Tatitlek

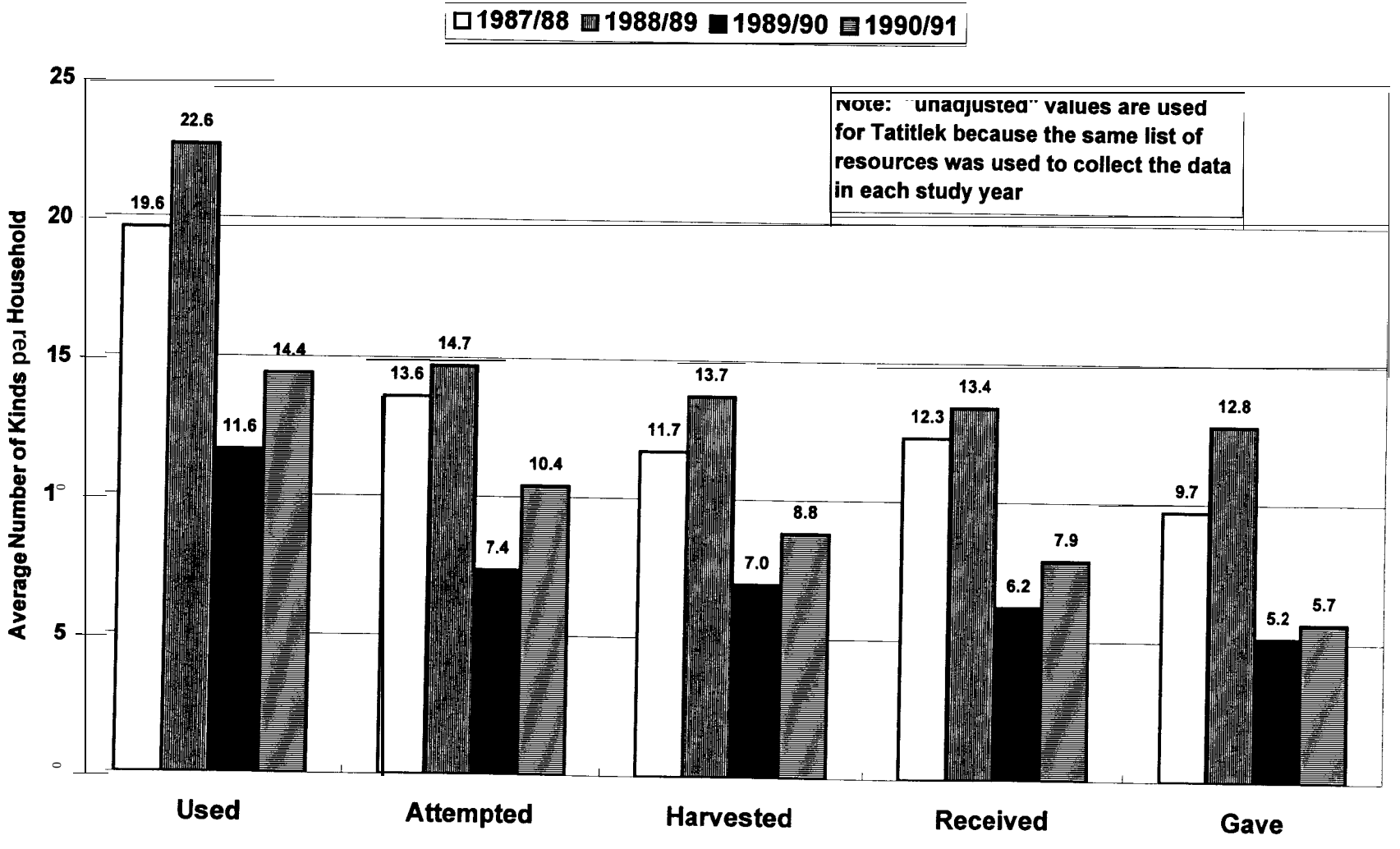
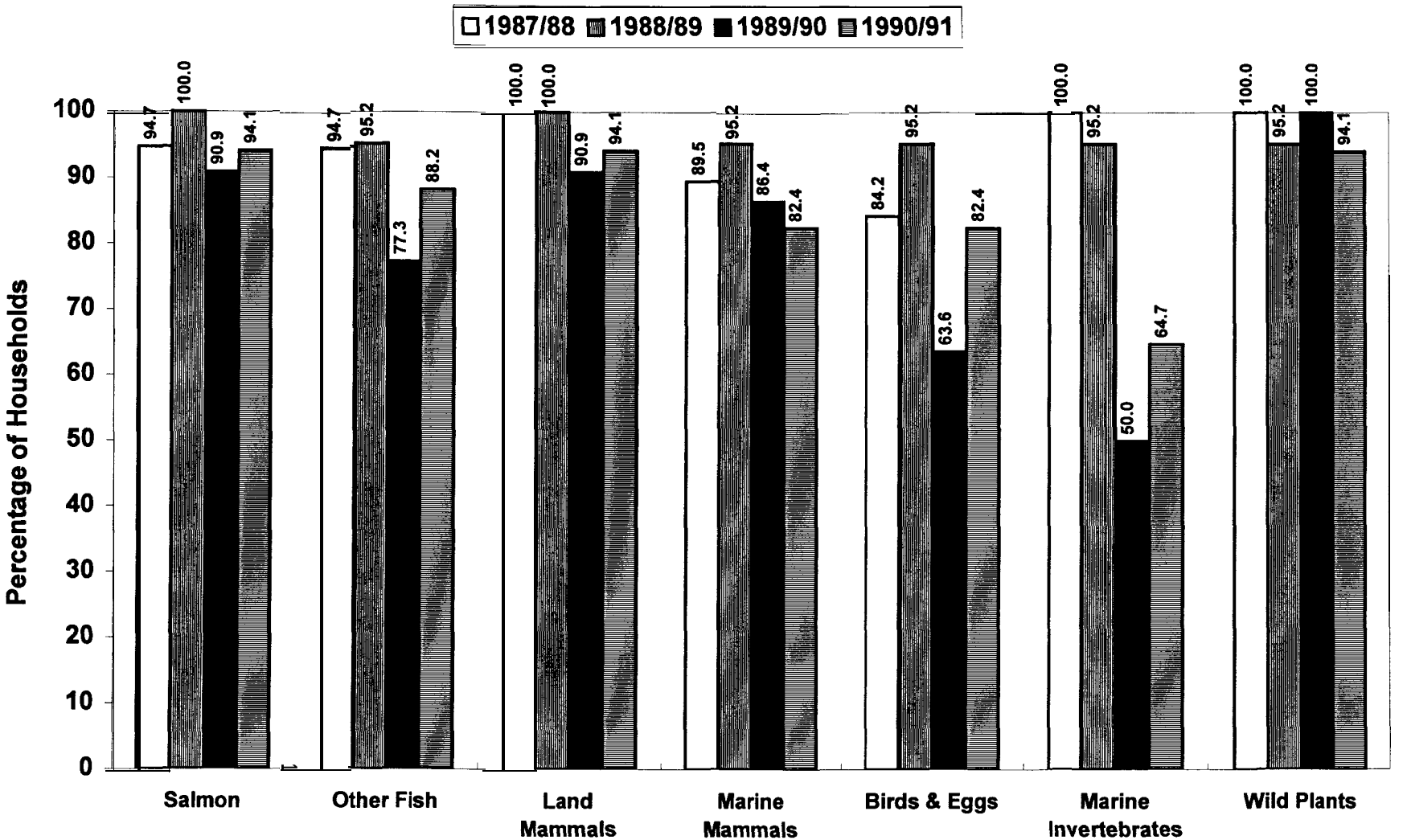


Figure 32. Percentage of Households Using Wild Resources by Category, Tatitlek



Assessments of Change

Regarding salmon, a number of households in Tatitlek reported reduced availability compared to other years. "I got half the normal amount of salmon. I tried for reds, but didn't get any," said one respondent. Another said their salmon harvests were "Even worse than last year (1989). The fish didn't even last the whole winter this year." Although some households reported that "We weren't as afraid to eat them this year," others said that 'we were uncertain about safety, but we still used them."

Overall, several Tatitlek families believed that harvests of fish other than salmon were up over the year before. "We ate more this year. We were less afraid," one family said. Another said, "We're still concerned about safety, but we're starting to harvest [fish]."

However, a large number of households in Tatitlek commented on the unusual scarcity of shellfish, especially octopus, and continuing concerns about oil contamination of marine invertebrates.

> The last time we got octopus was the first part of March. We used to get octopus quite often before the oil spill. This winter we've gone maybe three times, where before the spill we used to get them at least twice or three times a month. We got clams three times, about 12-16 clams [each time]. Before the spill, we got more than that.
>
> [Shellfish harvests were] even worse than the year before (1989-90). It was very poor compared to normal. I tried to get octopus, but couldn't find any. I could get three a night before the oil spill. I had to walk ten miles and still didn't find any. I'd still find a few last year, but this year absolutely nothing. I know it is because of the oil spill. They either died or the smell of the oil ruined their homes. That's one of our best foods in the winter.
>
> There was less octopus, even less than last year. There aren't as many fish around. If you go down to the dock, you don't see any bullheads or flounder like you used to.
>
> People can't find octopus. They used to be able to get half a dozen on a low tide. They know where the dens are, but there are no octopus now.
>
> There are a lot less octopus, and the bidarkies are gone. The clams and shrimp I got were all tiny, hardly worth the trouble.
>
> I won't mess with any of that (shellfish). I'll still wait for awhile.

Several factors appeared to influence deer harvest levels in Tatitlek in 1990/91. In December 1990, a Tatitlek man was cited for spot-lighting deer in a traditional village hunting area, in violation of state hunting regulations (5 AAC 92.080 [7]). This incident reportedly inhibited other hunters. "People are afraid to go out hunting now, because of the deer bust," one person said. Also, contamination concerns about deer eating oiled kelp remained. One person said, "Deer is getting kind of scarce. I think it had a lot to do with the oil spill." Another remarked that,

> Our [deer harvest] was less than usual, even less than 1989. There were less deer to hunt. We were afraid to eat them, worried about oil. We ate them anyway, because otherwise we wouldn't have anything to eat. We say, "At least if we die from it, we all die together."

Consequently, there was less deer meat to share throughout the village, as the following comment illustrates:

> We usually get enough deer to get through the winter, but people didn't get enough to give away this year.

As in most other villages, Tatitlek respondents observed reduced levels of marine mammals in their harvest areas in 1990/91. For some, this scarcity was blamed on the spill, and meant that hunting for seals was unproductive: "The oil spill affected everything in the sea. It's not worth it to go out, so far." Another family reported that,

> We've reduced our [marine mammal hunting] because of oil. We got a little more this year than in 1989. We're still concerned about contamination.

Yet another household offered this comment about their subsistence uses of marine mammals in Tatitlek in the second year after the spill:

> We started craving for it [seal meat]. We could only go so long without it. We get tired of eating beef and chicken. We wouldn't touch [seal] that first year after the spill. [Now] subsistence food is on our table at least twice a week.

Finally, Tatitlek households noted a continuing scarcity of birds, especially sea ducks, which they attribute to the oil spill. Concerns about contamination of these resources remain very high in this village. Typical comments included the following:

> It was even worse than last year. We are leery of collecting [gull] eggs. There are fewer eggs, and fewer ducks than before the oil spill. The sky is usually black with ducks during herring season, but not this year.
>
> We did not get nearly as much [ducks] as usual. Less than last year. We were afraid to eat them, because of fear of oil contamination. But we ate them anyway.
>
> There are fewer birds around since the oil spill, especially sea ducks. They used to blacken the sky during the herring spawning season. Now you don't see them since the oil spill. There are even fewer ducks than last year.

NANWALEK

Harvest Levels and Species Used

Overall, the subsistence harvests of wild resources in Nanwalek in 1990/91, the second year after the *Exxon* Valdez oil spill, were estimated at 181.3 pounds per person (Table 27). This represents an increase from the 140.6 pounds per person harvested in the first year after the spill (1989), but is still well below the single pre-spill estimate of 284.7 pounds per person, for 1987 (Fig. 18). This is consistent with

Table 27. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Nanwalek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	100.0	100.0	100.0	97.1	33,336.30	813.08	181.26			10.30%	10.00%
Fish	100.0	94.3	94.3	88.6	88.6	27,188.34	663.13	147.83			11.10%	10.80%
Salmon	100.0	85.7	85.7	85.7	77.1	16,819.49	410.23	91.45	6,068.00	148.00	12.90%	12.80%
Chum Salmon	42.9	25.7	22.9	28.6	20.0	858.19	20.93	4.67	130.03	3.17	38.70%	38.70%
Coho Salmon	94.3	74.3	74.3	51.4	42.9	4,606.76	112.36	25.05	869.20	21.20	14.60%	15.20%
Chinook Salmon	65.7	28.6	28.6	54.3	28.6	614.65	14.99	3.34	62.09	1.51	31.00%	31.50%
Pink Salmon	94.3	80.0	74.3	51.4	68.6	6,487.37	158.23	35.27	3,243.69	79.11	14.20%	14.00%
Sockeye Salmon	100.0	77.1	77.1	62.9	42.9	3,345.60	81.60	18.19	1,115.20	27.20	19.50%	19.50%
Spawnouts, Salmon	48.6	34.3	34.3	34.3	20.0	906.92	22.12	4.93	647.80	15.80	29.00%	29.10%
Non-Salmon Fish	97.1	94.3	94.3	77.1	80.0	10,368.85	252.90	56.38			12.90%	11.80%
Cod	77.1	54.3	54.3	51.4	40.0	1,183.03	28.85	6.43	424.06	10.34	15.30%	14.50%
Pacific Tom Cod	37.1	17.1	17.1	31.4	11.4	32.21	0.79	0.18	64.43	1.57	44.90%	45.40%
Pacific Cod (Gray)	71.4	51.4	51.4	42.9	37.1	1,150.81	28.07	6.26	359.63	8.77	16.40%	14.90%
Sablefish (Black Cod)	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Greenling	22.9	20.0	20.0	11.4	14.3	149.94	3.66	0.82	76.14	1.86	31.80%	31.80%
Lingcod	11.4	11.4	11.4	2.9	5.7	98.40	2.40	0.54	24.60	0.60	43.20%	43.50%
Unknown Greenling	14.3	11.4	11.4	11.4	11.4	51.54	1.26	0.28	51.54	1.26	43.60%	44.30%
Flounder	40.0	31.4	31.4	22.9	17.1	361.97	8.83	1.97	120.66	2.94	28.70%	28.90%
Sole	5.7	2.9	2.9	5.7	2.9	11.71	0.29	0.06	11.71	0.29	77.70%	76.70%
Halibut	77.1	57.1	51.4	60.0	37.1	3,198.90	78.02	17.39	150.89	3.68	24.00%	24.10%
Herring	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Herring Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Roe on Kelp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Rockfish	14.3	5.7	5.7	11.4	5.7	123.00	3.00	0.67	82.00	2.00	54.70%	55.30%
Black Rockfish (black bass)	11.4	5.7	5.7	5.7	5.7	123.00	3.00	0.67	82.00	2.00	54.70%	55.30%
Red Rockfish	5.7	0.0	0.0	5.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sculpin	25.7	22.9	22.9	8.6	14.3	23.43	0.57	0.13	46.86	1.14	35.10%	33.50%
Irish Lord	22.9	20.0	20.0	8.6	11.4	22.26	0.54	0.12	44.51	1.09	36.90%	35.60%
Unknown Sculpin	2.9	2.9	2.9	0.0	2.9	1.17	0.03	0.01	2.34	0.06	77.70%	75.60%
Smelt	37.1	11.4	11.4	31.4	11.4	59.96	1.46	0.33			40.50%	39.10%
Eulachon (Hooligan, Candlefish)	37.1	11.4	11.4	31.4	11.4	59.96	1.46	0.33	18.45 gal	0.45	40.50%	39.10%
Unknown Smelt	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Groundfish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 27. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Nanwalek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Wolf Eel (Wolffish)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shark	2.9	2.9	2.9	0.0	2.9	10.54	0.26	0.06	1.17	0.03	77.70%	78.20%
Walleye Pollock (Whiting)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Trout and Char	94.3	88.6	88.6	57.1	65.7	5,246.36	127.96	28.53	3,747.40	91.40	18.90%	17.60%
Char (general)	94.3	85.7	85.7	48.6	60.0	4,409.96	107.56	23.98	3,149.97	76.83	22.30%	21.20%
Dolly Varden	94.3	85.7	85.7	48.6	60.0	4,409.96	107.56	23.98	3,149.97	76.83	22.30%	21.20%
Trout	65.7	51.4	51.4	28.6	25.7	836.40	20.40	4.55	597.43	14.57	31.80%	31.00%
Rainbow Trout	51.4	42.9	42.9	20.0	22.9	685.52	16.72	3.73	489.66	11.94	37.40%	36.60%
Steelhead	31.4	22.9	22.9	17.1	8.6	98.40	2.40	0.54	70.29	1.71	40.80%	39.70%
Unknown Trout	5.7	5.7	5.7	0.0	2.9	52.48	1.28	0.29	37.49	0.91	55.90%	57.30%
Game	77.1	17.1	11.4	77.1	17.1	330.37	8.06	1.80			40.00%	40.50%
Big Game	77.1	17.1	11.4	77.1	17.1	330.37	8.06	1.80			40.00%	40.50%
Black Bear	54.3	8.6	8.6	54.3	14.3	271.77	6.63	1.48	4.69	0.11	46.40%	47.40%
Deer	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Goat	5.7	2.9	2.9	2.9	2.9	58.60	1.43	0.32	0.81	0.02	77.70%	76.70%
Moose	40.0	11.4	0.0	40.0	2.9	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sheep, Wild	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%	0.00%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Coyote	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Hare	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snowshoe Hare	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Muskrat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolverine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 27. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Nanwalek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tree Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Mammals	80.0	17.1	14.3	77.1	25.7	993.37	24.23	5.40	11.71	0.29	39.60%	44.20%
Seal	74.3	17.1	14.3	68.6	25.7	524.80	12.80	2.85	9.37	0.23	37.10%	37.80%
Harbor Seal	74.3	17.1	14.3	68.6	25.7	524.80	12.80	2.85	9.37	0.23	37.10%	37.80%
Stellar Sea Lion	54.3	8.6	5.7	51.4	14.3	468.57	11.43	2.55	2.34	0.06	54.20%	54.40%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Birds and Eggs	65.7	48.6	40.0	57.1	34.3	405.08	9.88	2.20			26.60%	27.00%
Birds	57.1	42.9	34.3	37.1	28.6	311.60	7.60	1.69			29.30%	29.20%
Upland Game Birds	31.4	25.7	22.9	8.6	11.4	31.16	0.76	0.17	44.51	1.09	31.30%	31.80%
Grouse	31.4	25.7	22.9	8.6	11.4	29.52	0.72	0.16	42.17	1.03	31.50%	32.20%
Ptarmigan	2.9	2.9	2.9	0.0	0.0	1.64	0.04	0.01	2.34	0.06	77.70%	76.70%
Migratory Birds	54.3	34.3	28.6	37.1	22.9	280.44	6.84	1.52			30.70%	30.60%
Waterfowl	51.4	28.6	25.7	34.3	22.9	274.58	6.70	1.49			31.40%	31.40%
Ducks	51.4	28.6	25.7	34.3	22.9	274.58	6.70	1.49			31.40%	31.40%
Eider	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eider, Large	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Scoter	31.4	22.9	20.0	17.1	20.0	138.11	3.37	0.75	153.46	3.74	36.40%	36.60%
Scoter, White-winged	8.6	8.6	5.7	2.9	5.7	14.76	0.36	0.08	16.40	0.40	59.20%	57.00%
Scoter, Black	22.9	14.3	14.3	14.3	14.3	123.35	3.01	0.67	137.06	3.34	40.70%	41.20%
Harlequin	2.9	2.9	2.9	0.0	2.9	0.59	0.01	0.00	1.17	0.03	77.70%	75.60%
Goldeneye	22.9	11.4	11.4	11.4	0.0	22.49	0.55	0.12	28.11	0.69	44.50%	44.10%
Bufflehead	5.7	5.7	5.7	0.0	0.0	5.15	0.13	0.03	12.89	0.31	70.80%	71.20%
Merganser	20.0	14.3	11.4	11.4	5.7	16.87	0.41	0.09	28.11	0.69	51.90%	51.10%
Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mallard	28.6	22.9	20.0	17.1	14.3	91.37	2.23	0.50	91.37	2.23	29.40%	29.30%
Pintail	5.7	0.0	0.0	5.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wigeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Teal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shoveler	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 27. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Nanwalek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean	Harvest	Percapita
Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%	0.00%
Brant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
White-fronted Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Canada Geese (general)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tundra Swan (Whistling)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sandhill Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seabirds	14.3	8.6	5.7	11.4	2.9	5.86	0.14	0.03			54.20%	51.80%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Puffins	11.4	8.6	5.7	8.6	2.9	5.86	0.14	0.03	11.71	0.29	54.20%	51.80%
Gulls	5.7	0.0	0.0	5.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eggs	45.7	20.0	20.0	40.0	17.1	93.48	2.28	0.51	311.60	7.60	28.20%	29.90%
Seabird Eggs	45.7	20.0	20.0	40.0	17.1	93.48	2.28	0.51	311.60	7.60	28.20%	29.90%
Gull Eggs	45.7	20.0	20.0	40.0	17.1	91.37	2.23	0.50	304.57	7.43	28.20%	29.90%
Puffin Eggs	5.7	2.9	2.9	2.9	0.0	2.11	0.05	0.01	7.03	0.17	77.70%	78.70%
Marine Invertebrates	97.1	91.4	91.4	80.0	68.6	3,073.64	74.97	16.71			15.10%	14.70%
Clams	97.1	62.9	62.9	77.1	51.4	1,189.16	29.00	6.47	396.39 gal	9.67	20.40%	20.30%
Butter Clams	80.0	45.7	45.7	62.9	40.0	732.03	17.85	3.98	244.01 gal	5.95	24.70%	24.70%
Razor Clams	20.0	11.4	11.4	14.3	8.6	221.40	5.40	1.20	73.80 gal	1.80	61.90%	61.50%
Pacific Littleneck Clams (Steamers)	62.9	48.6	48.6	34.3	25.7	235.74	5.75	1.28	78.58 gal	1.92	23.70%	24.40%
Cockles	40.0	25.7	25.7	20.0	11.4	183.90	4.49	1.00	61.30 gal	1.50	35.40%	35.70%
Geoducks	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Scallops	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mussels	40.0	31.4	31.4	11.4	5.7	57.99	1.41	0.32	38.66 gal	0.94	36.60%	36.80%
Crabs	14.3	2.9	2.9	14.3	0.0	4.10	0.10	0.02	5.86	0.14	77.70%	76.70%
Dungeness Crab	11.4	2.9	2.9	11.4	0.0	4.10	0.10	0.02	5.86	0.14	77.70%	76.70%
King Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tanner Crab	5.7	0.0	0.0	5.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 27. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Nanwalek, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Chitons (bidarkis)	97.1	88.6	88.6	37.1	60.0	1,224.14	29.86	6.66	306.04 gal	7.46	16.80%	15.90%
Chitons (large)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Chitons (small)	97.1	88.6	88.6	37.1	60.0	1,224.14	29.86	6.66	306.04 gal	7.46	16.80%	15.90%
Octopus	57.1	48.6	37.1	25.7	20.0	344.40	8.40	1.87	86.10	2.10	26.50%	26.30%
Sea Urchin	8.6	8.6	8.6	2.9	2.9	1.46	0.04	0.01	2.93 gal	0.07	45.40%	44.60%
Shrimp	8.6	0.0	0.0	8.6	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Snails	60.0	51.4	51.4	11.4	11.4	60.13	1.47	0.33	40.09 gal	0.98	20.10%	19.90%
Whelk	8.6	8.6	8.6	0.0	2.9	5.71	0.14	0.03	3.81 gal	0.09	60.70%	59.70%
Limpets	8.6	8.6	8.6	0.0	0.0	2.64	0.06	0.01	1.76 gal	0.04	54.20%	51.70%
Plants and Berries	94.3	88.6	88.6	48.6	42.9	1,345.50	32.82	7.32	336.38 gal	8.20	15.80%	14.30%
Berries	91.4	88.6	85.7	37.1	28.6	1,122.93	27.39	6.11	280.73 gal	6.85	17.10%	15.70%
Plants/Greens/Mushrooms	45.7	45.7	45.7	5.7	17.1	125.34	3.06	0.68	31.34 gal	0.76	20.90%	19.80%
Seaweed/Kelp (Food)	62.9	42.9	42.9	28.6	17.1	97.23	2.37	0.53	24.31 gal	0.59	24.20%	24.50%
Black Seaweed	62.9	42.9	42.9	28.6	17.1	97.23	2.37	0.53	24.31 gal	0.59	24.20%	24.50%
Wood	100.0	91.4	88.6	37.1	31.4	0.00	0.00	0.00	[illegible]	3.58	21.90%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Nanwalek households' own evaluations of use levels (Table 19, Table 20). While 51.4 percent said their uses in 1990/91 were higher than those of the first post-spill year, almost all households (91.4 percent) believed their uses were still below pre-spill levels.

As shown in Figure 33 and Figure 34, in comparison with the first pre-spill year, increases in subsistence harvests at Nanwalek were reported for salmon (60.2 pounds per person in 1989, 91.5 pounds in 1990/91), other fish (30.2 pounds in 1989, 56.4 pounds in 1990/91), marine invertebrates (16.0 pounds in 1989, 16.7 in 1990/91), and wild plants (4.4 pounds in 1989, 7.3 pounds in 1990/91). The first "post spill" year harvest estimate of marine invertebrates for Nanwalek is inflated, however, in that in April 1989, many households in the village made special efforts to harvest shellfish before the oil reached their harvest areas (Stanek forthcoming a). Harvests of salmon at Nanwalek remained slightly below 1987 levels (109.1 pounds per person), however, while harvests of other fish were still only about half of the 1987 level (107.2 pounds per person). On the other hand, marine invertebrate harvests in 1990/91 approached pre-spill levels (18.6 pounds in 1987). While wild plant harvests were only half of those of 1987 (14.7 pounds), that year produced an exceptional berry crop in the Nanwalek area (Stanek forthcoming b; cf. Stanek 1985 for general patterns of subsistence use in Nanwalek and Port Graham).

In contrast, harvests of land mammals at Nanwalek declined markedly to only 1.8 pounds per person in 1990/91, compared to 14.8 pounds in 1989 and 9.0 pounds in 1987. Harvests of marine mammals continued a downward trend to 5.4 pounds per person in 1990/91, compared to 22.0 pounds in 1987 and 13.0 pounds in 1989. Finally, harvests of birds and eggs (2.2 pounds per person) showed little change over the first spill year (2.5 pounds) and were below the relatively low levels reported for 1987 (4.1 pounds) (Fig. 33).

The average number of kinds of resources used in Nanwalek during the 1990/91 study year was 22.4 (unadjusted values) (Fig. 35). This was a substantial increase over the average of 13.7 kinds reported for 1989, but was lower than the average of 25.0 recorded in 1987. The average number of resources attempted to harvest (15.4), harvested (14.8), received (13.1), and given away (8.9) also increased compared to the first year after the spill (9.9, 9.9, 6.9, and 7.2, respectively), but were still below pre-spill levels.

Levels of Participation

Every household in Nanwalek used, harvested, and received wild foods during the 1990/91 study year, and all but one shared harvests with other households (Table 27). This represents virtually no change over the two previous study years. However, as shown in Figure 36, the percentage of Nanwalek's households using two categories of wild foods, other fish and birds and eggs, bounced back to pre-spill levels after declining in 1989. The percentage of households using the other resource categories has been relatively constant across study years.

Figure 33. Subsistence Harvests by Resource Category, Pounds Usable Weight per Capita, Nanwalek

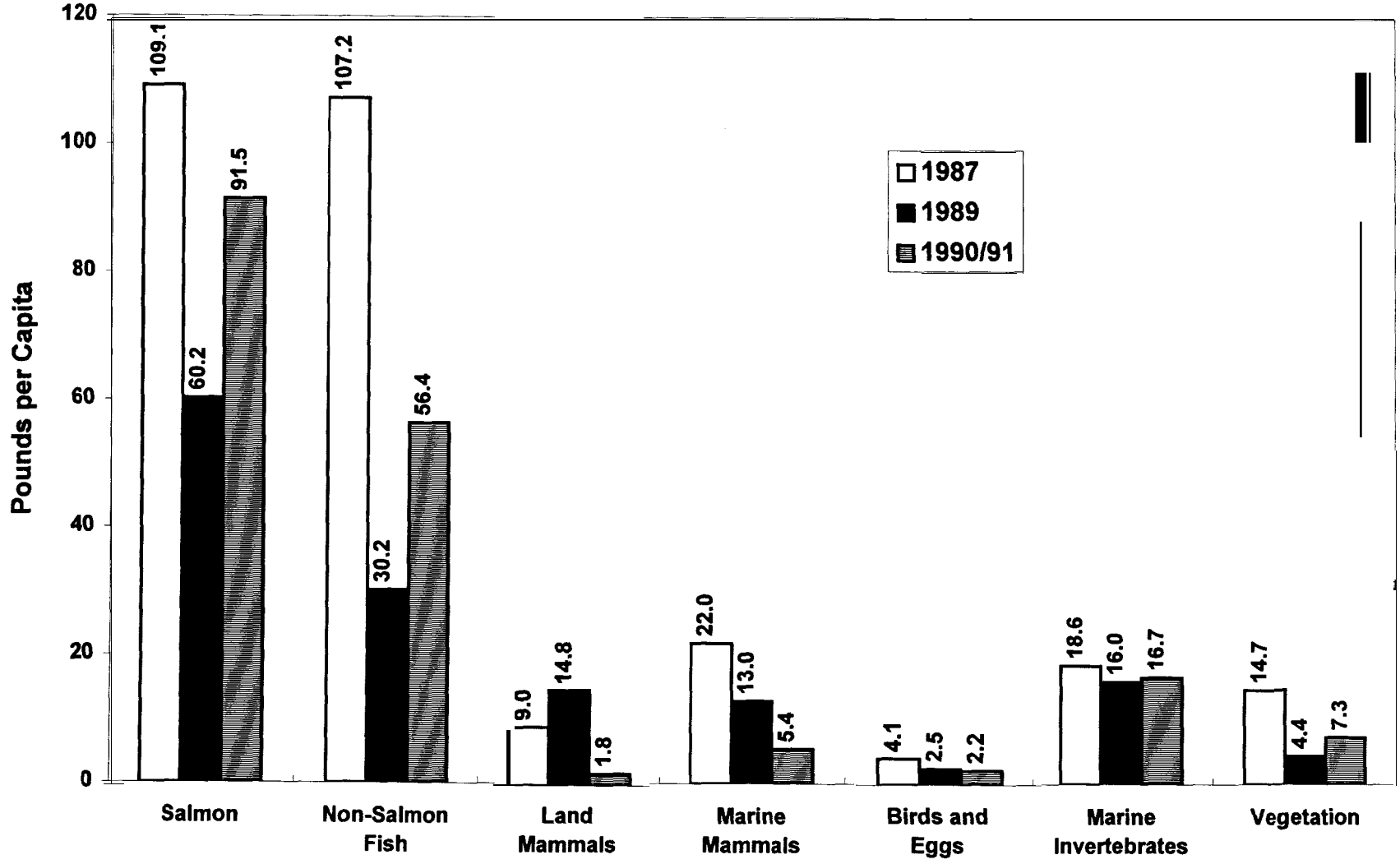


Figure 34. Percentage of Total Subsistence Harvest by Resource Category, Nanwalek

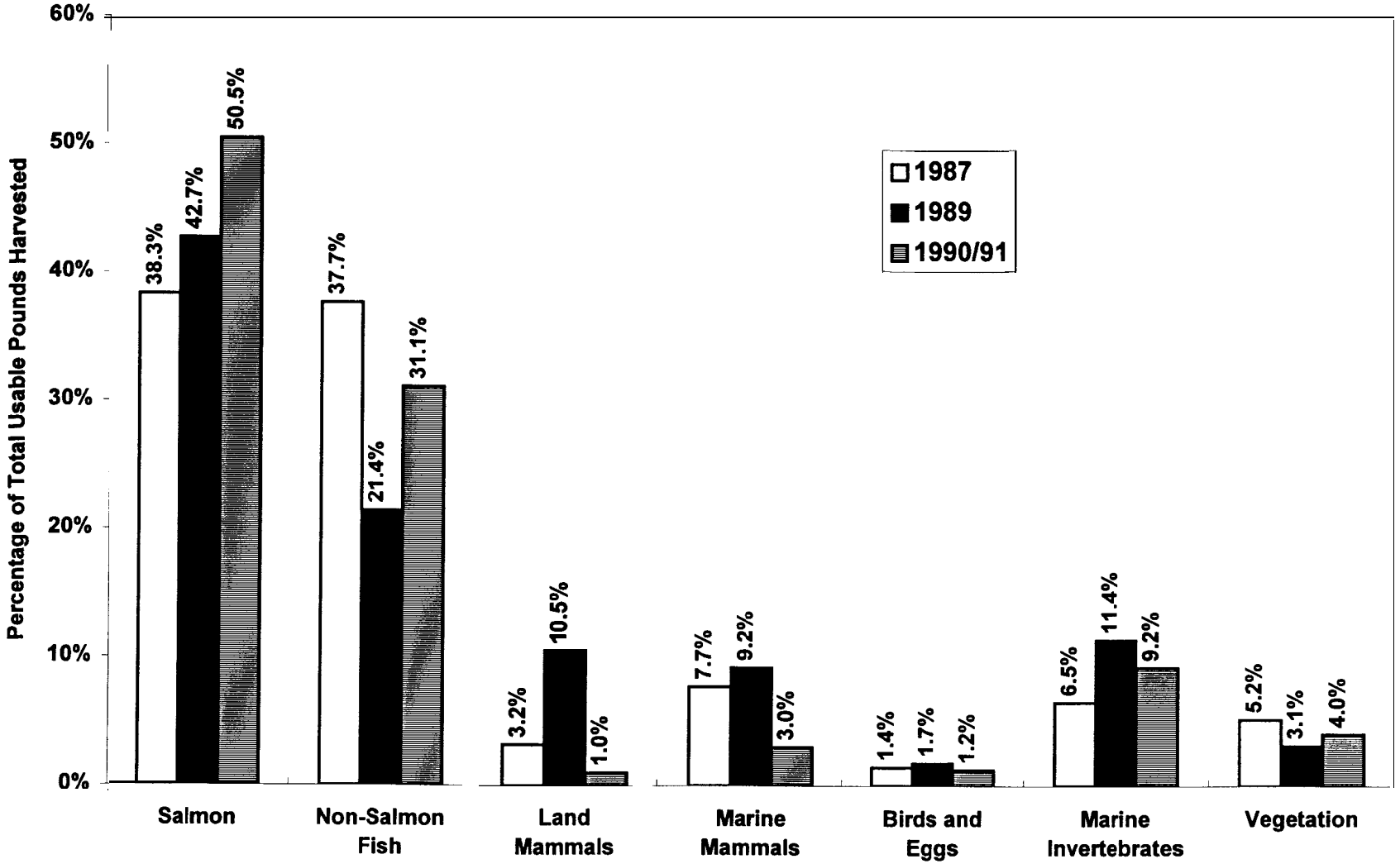


Figure 35. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Nanwalek

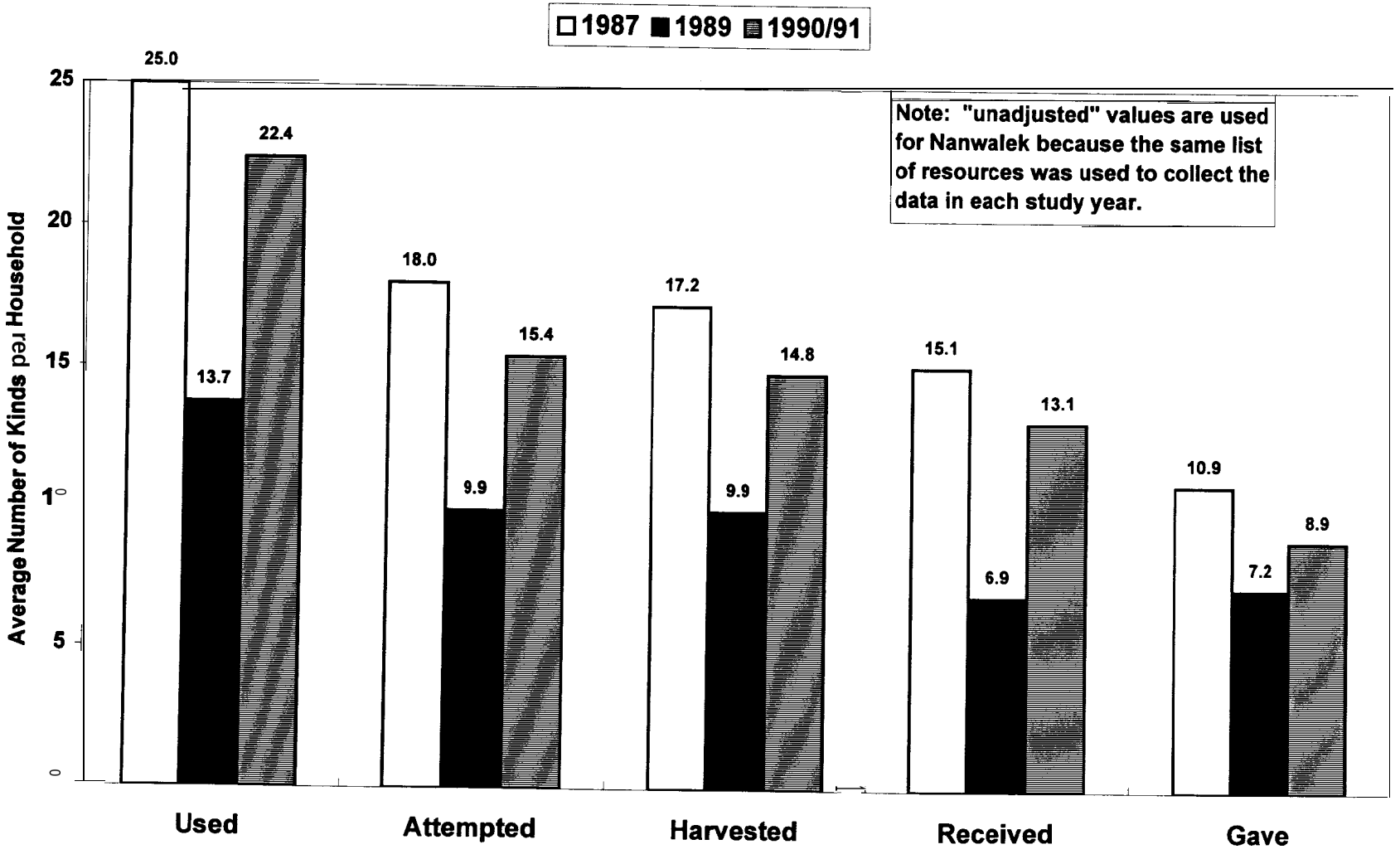
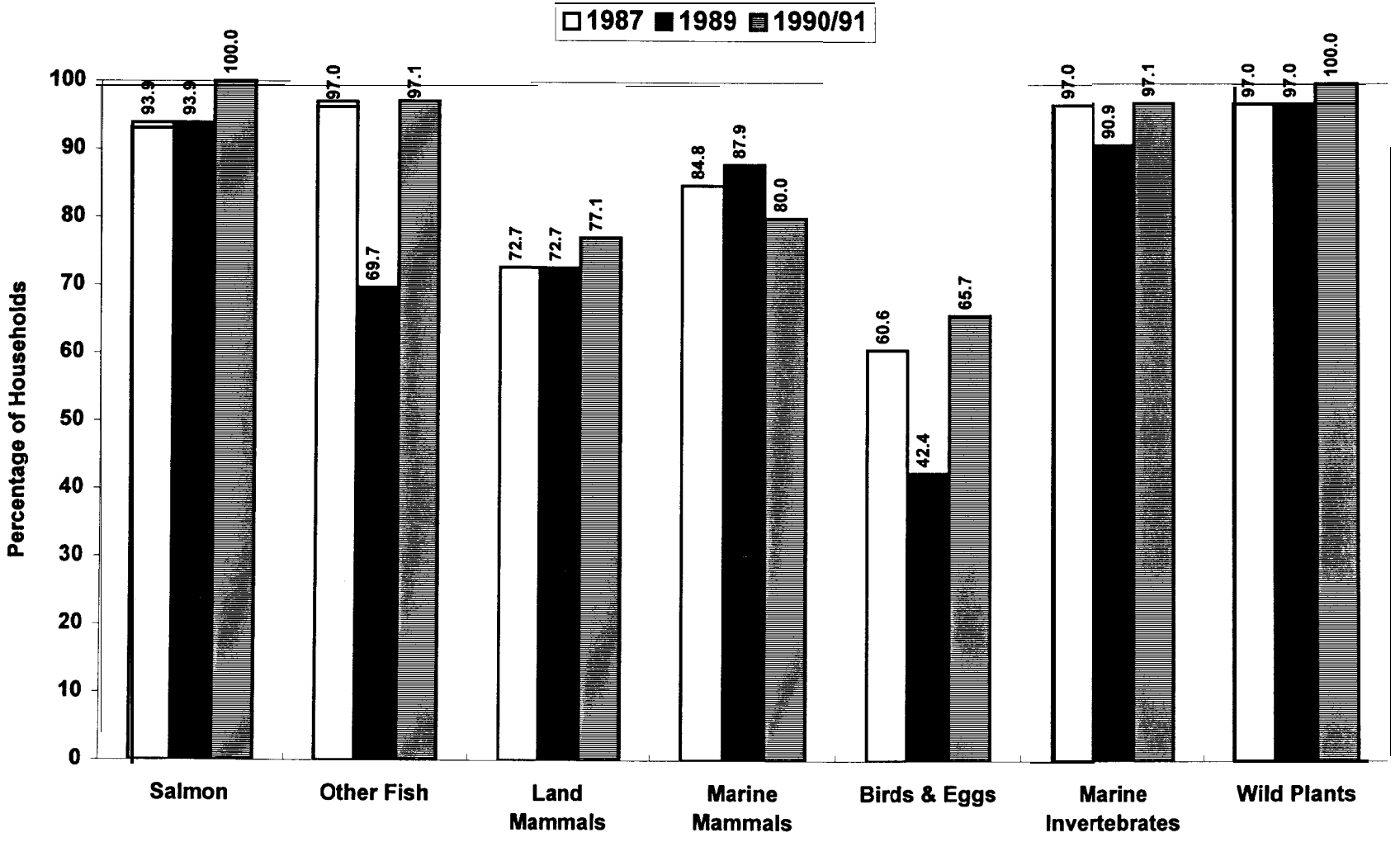


Figure 36. Percentage of Households Using Wild Resources by Category, Nanwalek



In 1990/91, 79 percent of the people in Nanwalek engaged in subsistence activities (Table 24). This was up from 63.5 percent the year before (Fig. 24). The percentage which fished (68.8 percent) or gathered (72.0 percent) were both up sharply from 1989, while the percentage which hunted (8.3 percent) stayed about the same.

Assessments of Change

Household comments from Nanwalek about subsistence uses in the 1990/91 study year reveal that, on the one hand, many people tried to renew their uses of wild foods while, on the other hand, many also continued to feel ambivalence and uncertainty about the safety of subsistence foods. For example, one household said, regarding salmon, that,

> It (the harvest) was a lot better (than 1989). We got more in 1990 because we did not get out in 1989 since we worked on the oil spill clean up.

But another said,

> It seems a little better. In 1989, we didn't get any salmon, just the king salmon from Tyonek. (But) I'm still scared to eat the fish.

In comparing subsistence uses of marine invertebrates during the study year with the year before, one Nanwalek household remarked that

> We didn't get anything in 1989 at all. Last month (March 1991) was the first time we got snails or limpets or any of these. It's just like starting all over again. There was a little boy here who didn't know what snails were.

Another said that,

> We're just now starting to get bidarkies and mussels. . For a year after the spill, we didn't want to eat bidarkies. Now we're starting to.

And another household provided a similar comment:

> We just started going out during the past few months (for shellfish). We did not harvest any during 1989. We are starting to trust the shellfish again. We changed our minds because there were samples tested and the results came back good, saying things were OK.

Regarding birds and marine mammals, many Nanwalek households noted continued scarcity. "There's no birds. There's nothing to hunt," and " We don't see that many ducks around" were typical comments. For marine mammals, a household remarked that, "Seems like we don't see seals or sea lions no more." Other typical observations about marine mammals included the following:

> Both (post-spill) years were worse than several years ago. They've disappeared. We used to see seals right out there. Now we go up above Seldovia to get them.
>
> The seals are quite a ways down (in population). There's hardly any seal you find around here after the oil spill. We used to get them in Dogfish Bay. Now there's nothing. There's only a few sea otters. Sea lions are disappearing too.

PORT GRAHAM

Harvest Levels and Species Used

As at Nanwalek, Port Graham's per capita harvest of wild foods increased in 1990/91 over the previous year. The subsistence harvest averaged 214.0 pounds per person in 1990/91 compared to 122.2 in 1989 (Table 28, Fig. 18). Unlike Nanwalek, Port Graham's harvest level in the second year after the spill was very close to that estimated for 1987, 228.8 pounds per person, the only pre-spill year for which comprehensive data are available. Port Graham, along with Larsen Bay (see below), were the only study communities whose 1990/91 subsistence harvests almost matched or exceeded pre-spill averages.

As at Nanwalek, just over half of Port Graham's households (56.5 percent) said that they believed that their overall levels of subsistence uses had gone up in 1990/91 compared to the year before (Table 19). A slightly higher percentage of Port Graham respondents said that their use levels were about the same (10.9 percent) or higher (13.0 percent) than before the spill, but most, as at Nanwalek, said that subsistence uses remained below pre-spill levels (73.9 percent) (Table 20)

As shown in Figure 37 and Figure 38, there were notable increases in four categories of wild foods in Port Graham's' 1990/91 harvest compared to the year before. Harvests of salmon rose substantially, from 39.9 pounds per person in 1989 to 95.0 pounds in 1990/91. The latter was virtually identical to the 96.4 pounds estimated for 1987. Harvests of other fish also rose dramatically, from 59.7 pounds per person in 1989 to 92.8 pounds in 1990/91. The study year harvest of other fish exceeded the pre-spill estimate of 78.3 pounds per person. The subsistence harvest of marine invertebrates at Port Graham showed an increase to 14.5 pounds per person compared to 8.6 pounds in 1989,[3] and approached the 1987 harvest level of 16.7 pounds per person. Finally, although harvests of wild plants rose to 5.7 pounds per person over the 1989 level of 2.7 pounds, this harvest was well below the 15.8 pounds recorded in 1987 (an exceptional year for berries near the village [Stanek, forthcoming b]).

In contrast, harvests of two resource categories, land mammals and birds and eggs, remained relatively low in Port Graham in 1990/91. Land mammal harvests averaged only 1.5 pounds per person, compared to 0.4 pounds in 1989 and 5.4 pounds in 1987. The 1.1 pound per person harvest of birds and eggs compared with 2.0 pounds in 1989 and 3.2 pounds in 1987. Finally, as in Nanwalek, marine

[3] As in Nanwalek, "post spill" marine invertebrate harvests at Port Graham are probably inflated because of intensified harvest efforts prior to the arrival of oil near the community's traditional harvest areas (Stanek forthcoming a).

Table 28. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Port Graham, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	100.0	97.8	97.8	89.1	35,047.33	637.22	213.96			13.40%	12.00%
Fish	97.8	91.3	91.3	89.1	69.6	30,768.68	559.43	187.84			14.10%	12.80%
Salmon	95.7	89.1	89.1	78.3	65.2	15,563.45	282.97	95.01	4,190.76	76.20	13.10%	11.30%
Chum Salmon	78.3	45.7	41.3	50.0	30.4	946.96	17.22	5.78	143.48	2.61	18.90%	20.00%
Coho Salmon	93.5	65.2	63.0	50.0	41.3	6,153.18	111.88	37.56	1,160.98	21.11	17.00%	16.80%
Chinook Salmon	67.4	45.7	45.7	34.8	32.6	2,627.80	47.78	16.04	265.43	4.83	20.30%	18.80%
Pink Salmon	91.3	67.4	67.4	37.0	47.8	3,426.74	62.30	20.92	1,713.37	31.15	17.90%	18.10%
Sockeye Salmon	60.9	39.1	39.1	34.8	21.7	2,134.24	38.80	13.03	711.41	12.93	29.80%	28.60%
Spawnouts, Salmon	37.0	30.4	28.3	13.0	8.7	274.52	4.99	1.68	196.09	3.57	29.90%	29.80%
Non-Salmon Fish	93.5	80.4	78.3	71.7	56.5	15,205.24	276.46	92.83			19.90%	18.60%
Cod	39.1	32.6	28.3	17.4	21.7	932.85	16.96	5.69	503.37	9.15	32.60%	35.60%
Pacific Tom Cod	13.0	13.0	6.5	6.5	6.5	125.54	2.28	0.77	251.09	4.57	48.30%	47.70%
Pacific Cod (Gray)	32.6	26.1	26.1	10.9	17.4	807.30	14.68	4.93	252.28	4.59	41.50%	40.30%
Sablefish (Black Cod)	13.0	8.7	8.7	6.5	6.5	318.76	5.80	1.95	102.83	1.87	66.70%	65.10%
Greenling	21.7	15.2	15.2	6.5	8.7	181.74	3.30	1.11	127.93	2.33	39.10%	37.30%
Lingcod	8.7	8.7	6.5	2.2	4.3	71.74	1.30	0.44	17.93	0.33	58.10%	58.60%
Unknown Greenling	15.2	10.9	10.9	4.3	6.5	110.00	2.00	0.67	110.00	2.00	43.20%	43.00%
Flounder	30.4	26.1	23.9	13.0	13.0	595.43	10.83	3.64	198.48	3.61	31.90%	32.70%
Sole	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Halibut	89.1	67.4	58.7	47.8	50.0	10,279.81	186.91	62.76	484.90	8.82	22.80%	21.80%
Herring	17.4	2.2	2.2	15.2	2.2	258.26	4.70	1.58	43.04 gal	0.78	81.50%	81.70%
Herring Roe	2.2	0.0	0.0	2.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Roe on Kelp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Rockfish	39.1	28.3	26.1	19.6	19.6	741.90	13.49	4.53	385.00	7.00	30.80%	27.10%
Black Rockfish (black bass)	23.9	19.6	17.4	8.7	10.9	478.86	8.71	2.92	319.24	5.80	36.70%	37.10%
Red Rockfish	26.1	15.2	13.0	15.2	10.9	263.04	4.78	1.61	65.76	1.20	43.10%	42.40%
Sculpin	8.7	10.9	8.7	0.0	4.3	23.32	0.42	0.14	46.63	0.85	48.90%	48.50%
Irish Lord	2.2	2.2	2.2	0.0	2.2	2.39	0.04	0.01	4.78	0.09	81.50%	82.90%
Unknown Sculpin	6.5	8.7	6.5	0.0	2.2	20.92	0.38	0.13	41.85	0.76	54.00%	53.30%
Smelt	41.3	4.3	4.3	39.1	8.7	30.43	0.55	0.19			60.70%	61.10%
Eulachon (Hooligan, Candlefish)	41.3	4.3	4.3	39.1	8.7	30.43	0.55	0.19	9.36 gal	0.17	60.70%	61.10%
Unknown Smelt	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Groundfish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 28. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Port Graham, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean H H	Harvest	Percapita
Wolf Eel (Wolffish)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0 .0	0.00%	0.00%
Shark	2.2	2.2	2.2	0.0	2.2	21.52	0.39	0.13	2.39	0 .0	81.50%	80.50%
Walleye Pollock (Whiting)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0 .0	0.00%	0.00%
Trout and Char	58.7	52.2	52.2	17.4	23.9	1,821.22	33.11	11.12	1,300.87	23 .6	34.10%	32.50%
Char (general)	56.5	50.0	50.0	15.2	23.9	1,787.74	32.50	10.91	1,276.96	23 .2	34.80%	33.20%
Dolly Varden	56.5	50.0	50.0	15.2	23.9	1,787.74	32.50	10.91	1,276.96	23 .2	34.80%	33.20%
Trout	8.7	6.5	6.5	2.2	2.2	33.48	0.61	0.20	23.91	0 .4	54.20%	54.90%
Rainbow Trout	2.2	2.2	2.2	0.0	0.0	16.74	0.30	0.10	11.96	0 .2	81.50%	82.30%
Steelhead	6.5	4.3	4.3	2.2	2.2	16.74	0.30	0.10	11.96	0 .2	73.60%	73.70%
Unknown Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0 .0	0.00%	0.00%
Game	50.0	19.6	6.5	45.7	15.2	244.99	4.45	1.50			46.80%	44.30%
Big Game	50.0	19.6	6.5	45.7	15.2	242.00	4.40	1.48			46.90%	44.40%
Black Bear	34.8	10.9	4.3	30.4	10.9	138.70	2.52	0.85	2.39	0. 04	57.00%	55.10%
Deer	30.4	2.2	2.2	30.4	4.3	103.30	1.88	0.63	2.39	0. 04	81.50%	79.90%
Goat	4.3	4.3	0.0	4.3	0.0	0.00	0.00	0.00	0.00	0. ∞	0.00%	0.00%
Moose	8.7	15.2	0.0	8.7	0.0	0.00	0.00	0.00	0.00	0. ∞	0.00%	0.00%
Sheep, Wild	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0. ∞	0.00%	0.00%
Small Game/Furbearer	2.2	2.2	2.2	0.0	0.0	2.99	0.05	0.02			81.50%	80.50%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Coyote	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Hare	2.2	2.2	2.2	0.0	0.0	2.39	0.04	0.01	1.20	°.0≈	81.50%	80.50%
Snowshoe Hare	2.2	2.2	2.2	0.0	0.0	2.39	0.04	0.01	1.20	°.0≈	81.50%	80.50%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Muskrat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%
Wolverine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	°.0°	0.00%	0.00%

Table 28. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Port Graham, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Squirrel	2.2	2.2	2.2	0.0	0.0	0.60	0.01	0.00	1.20	0.02	81.50%	80.50%
Tree Squirrel	2.2	2.2	2.2	0.0	0.0	0.60	0.01	0.00	1.20	0.02	81.50%	80.50%
Marine Mammals	71.7	21.7	6.5	71.7	19.6	535.65	9.74	3.27	10.76	0.20	47.80%	50.50%
Seal	71.7	21.7	6.5	71.7	19.6	535.65	9.74	3.27	9.57	0.17	51.10%	50.50%
Harbor Seal	71.7	21.7	6.5	71.7	19.6	535.65	9.74	3.27	9.57	0.17	51.10%	50.50%
Stellar Sea Lion	13.0	4.3	0.0	13.0	2.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sea Otter	2.2	2.2	2.2	0.0	0.0	0.00	0.00	0.00	1.20	0.02	81.50%	0.00%
Birds and Eggs	50.0	41.3	34.8	28.3	19.6	182.46	3.32	1.11			26.50%	25.10%
Birds	50.0	41.3	34.8	23.9	19.6	180.30	3.28	1.10			26.70%	25.30%
Upland Game Birds	19.6	21.7	19.6	2.2	6.5	20.92	0.38	0.13	29.89	0.54	31.80%	31.60%
Grouse	19.6	21.7	19.6	2.2	6.5	20.92	0.38	0.13	29.89	0.54	31.80%	31.60%
Ptarmigan	0.0	4.3	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Migratory Birds	43.5	28.3	23.9	23.9	15.2	159.38	2.90	0.97			29.20%	27.80%
Waterfowl	43.5	28.3	23.9	23.9	15.2	155.79	2.83	0.95			28.90%	27.40%
Ducks	43.5	28.3	23.9	23.9	15.2	155.79	2.83	0.95			28.90%	27.40%
Eider	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eider, Large	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Scoter	15.2	15.2	15.2	0.0	6.5	27.98	0.51	0.17	31.09	0.57	38.20%	37.60%
Scoter, White-winged	6.5	6.5	6.5	0.0	4.3	10.76	0.20	0.07	11.96	0.22	54.50%	55.50%
Scoter, Black	8.7	10.9	8.7	0.0	2.2	17.22	0.31	0.11	19.13	0.35	53.60%	52.30%
Harlequin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Goldeneye	28.3	17.4	15.2	17.4	6.5	38.26	0.70	0.23	47.83	0.87	43.90%	42.60%
Bufflehead	8.7	8.7	6.5	2.2	2.2	3.83	0.07	0.02	9.57	0.17	51.10%	49.40%
Merganser	17.4	13.0	13.0	6.5	6.5	16.50	0.30	0.10	27.50	0.50	42.30%	40.90%
Scaup	2.2	2.2	2.2	0.0	0.0	1.08	0.02	0.01	1.20	0.02	81.50%	81.70%
Mallard	30.4	23.9	19.6	15.2	10.9	68.15	1.24	0.42	68.15	1.24	31.50%	30.40%
Pintail	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wigeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Teal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shoveler	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	2.2	0.0	0.0	2.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 28. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Port Graham, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf. Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Geese	2.2	0.0	0.0	2.2	0.0	0.00	0.00	0.00			0.00%	0.00%
Brant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
White-fronted Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Canada Geese (general)	2.2	0.0	0.0	2.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tundra Swan (Whistling)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sandhill Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seabirds	2.2	2.2	2.2	0.0	0.0	3.59	0.07	0.02			81.50%	81.70%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Loons	2.2	2.2	2.2	0.0	0.0	3.59	0.07	0.02	1.20	0.02	81.50%	81.70%
Puffins	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gulls	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eggs	8.7	2.2	2.2	8.7	0.0	2.15	0.04	0.01	7.17	0.13	81.50%	79.90%
Seabird Eggs	8.7	2.2	2.2	8.7	0.0	2.15	0.04	0.01	7.17	0.13	81.50%	79.90%
Gull Eggs	8.7	2.2	2.2	8.7	0.0	2.15	0.04	0.01	7.17	0.13	81.50%	79.90%
Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Invertebrates	97.8	87.0	87.0	82.6	65.2	2,380.45	43.28	4.53			12.10%	12.10%
Clams	89.1	52.2	52.2	73.9	34.8	796.91	14.49	4.87	265.64 gal	4.83	19.70%	19.50%
Butter Clams	76.1	41.3	41.3	63.0	32.6	722.77	13.14	4.41	240.92 gal	4.38	21.00%	20.90%
Razor Clams	17.4	2.2	2.2	17.4	0.0	2.40	0.04	0.01	0.80 gal	0.01	81.50%	81.70%
Pacific Littleneck Clams (Steamers)	26.1	15.2	15.2	17.4	4.3	71.74	1.30	0.44	23.91 gal	0.43	35.30%	34.90%
Cockles	39.1	23.9	21.7	23.9	6.5	219.99	4.00	1.34	73.33 gal	1.33	42.30%	42.30%
Geoducks	4.3	2.2	2.2	2.2	2.2	3.59	0.07	0.02	1.20 gal	0.02	81.50%	80.50%
Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mussels	10.9	10.9	10.9	0.0	4.3	15.24	0.28	0.09	0.16 gal	0.18	41.90%	41.20%
Crabs	2.2	0.0	0.0	2.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Dungeness Crab	2.2	0.0	0.0	2.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
King Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 28. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Port Graham, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Chitons (bidarkis)	97.8	80.4	80.4	60.9	52.2	1,001.61	18.21	6.11	250.50 gal	4.55	13.90%	13.90%
Chitons (large)	4.3	2.2	2.2	4.3	2.2	1.18	0.02	0.01	0.39 gal	0.01	81.50%	81.70%
Chitons (small)	97.8	80.4	80.4	60.9	52.2	1,000.43	18.19	6.11	250.11 gal	4.55	13.90%	13.90%
Octopus	60.9	41.3	37.0	37.0	26.1	301.30	5.48	1.84	75.33	1.37	28.20%	28.50%
Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Shrimp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Snails	37.0	34.8	34.8	4.3	15.2	38.67	0.70	0.24	25.78 gal	0.47	24.20%	24.40%
Whelk	6.5	6.5	6.5	0.0	0.0	3.14	0.06	0.02	2.09 gal	0.04	52.50%	52.90%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Plants and Berries	87.0	89.1	84.8	43.5	50.0	935.10	17.00	5.71	233.77 gal	4.25	11.90%	11.40%
Berries	78.3	78.3	73.9	21.7	30.4	671.38	12.21	4.10	167.85 gal	3.05	14.00%	13.50%
Plants/Greens/Mushrooms	26.1	23.9	23.9	10.9	8.7	89.67	1.63	0.55	22.42 gal	0.41	29.60%	29.50%
Seaweed/Kelp (Food)	60.9	41.3	39.1	28.3	23.9	174.04	3.16	1.06	43.51 gal	0.79	26.30%	26.10%
Black Seaweed	60.9	41.3	39.1	28.3	23.9	174.04	3.16	1.06	43.51 gal	0.79	26.30%	26.10%
Wood	63.0	58.7	58.7	13.0	28.3	0.00	0.00	0.00	177.35 crd	3.22	13.70%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Figure 37. Subsistence Harvests by Resource Category, Pounds Usable Weight per Capita, Port Graham

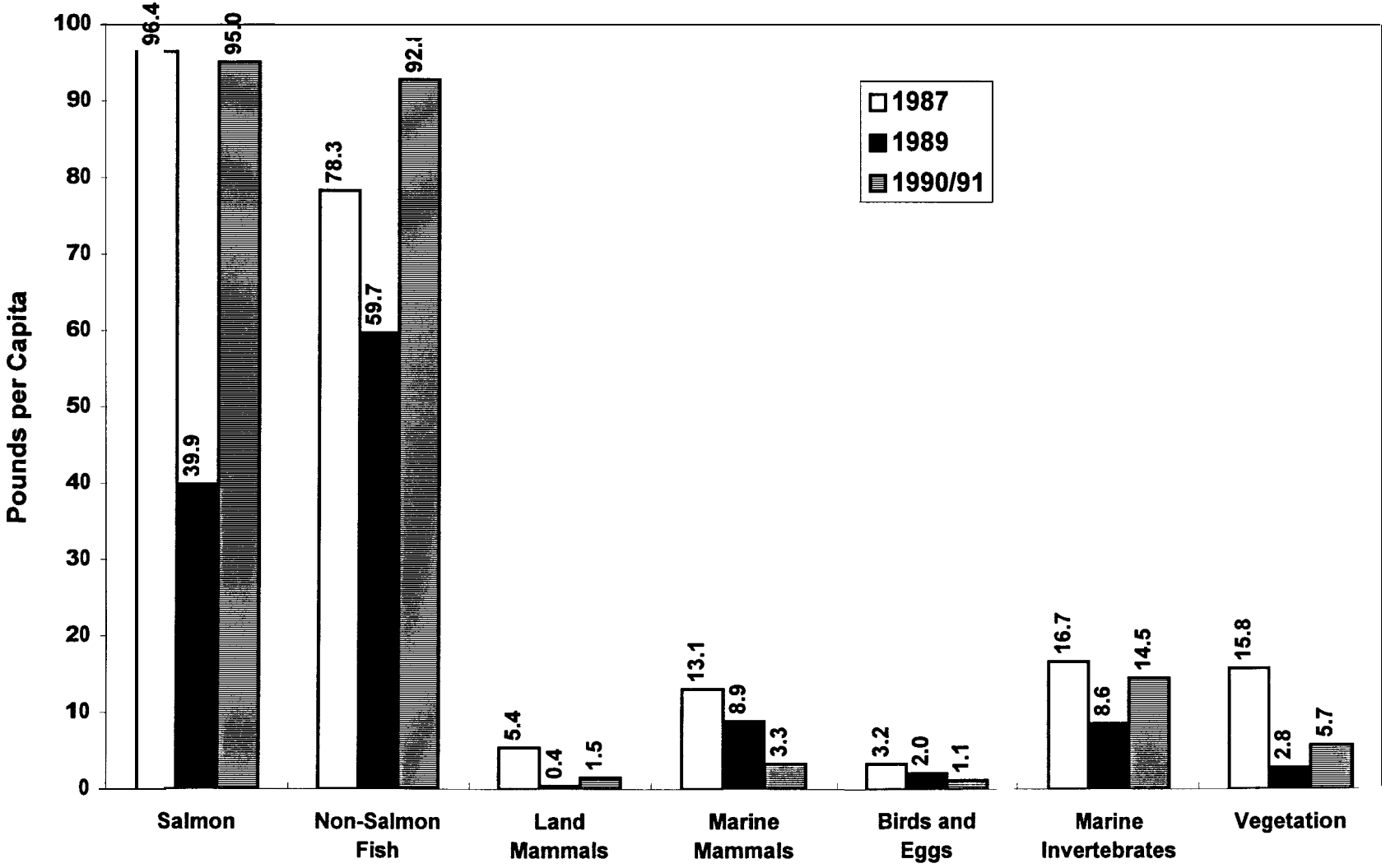
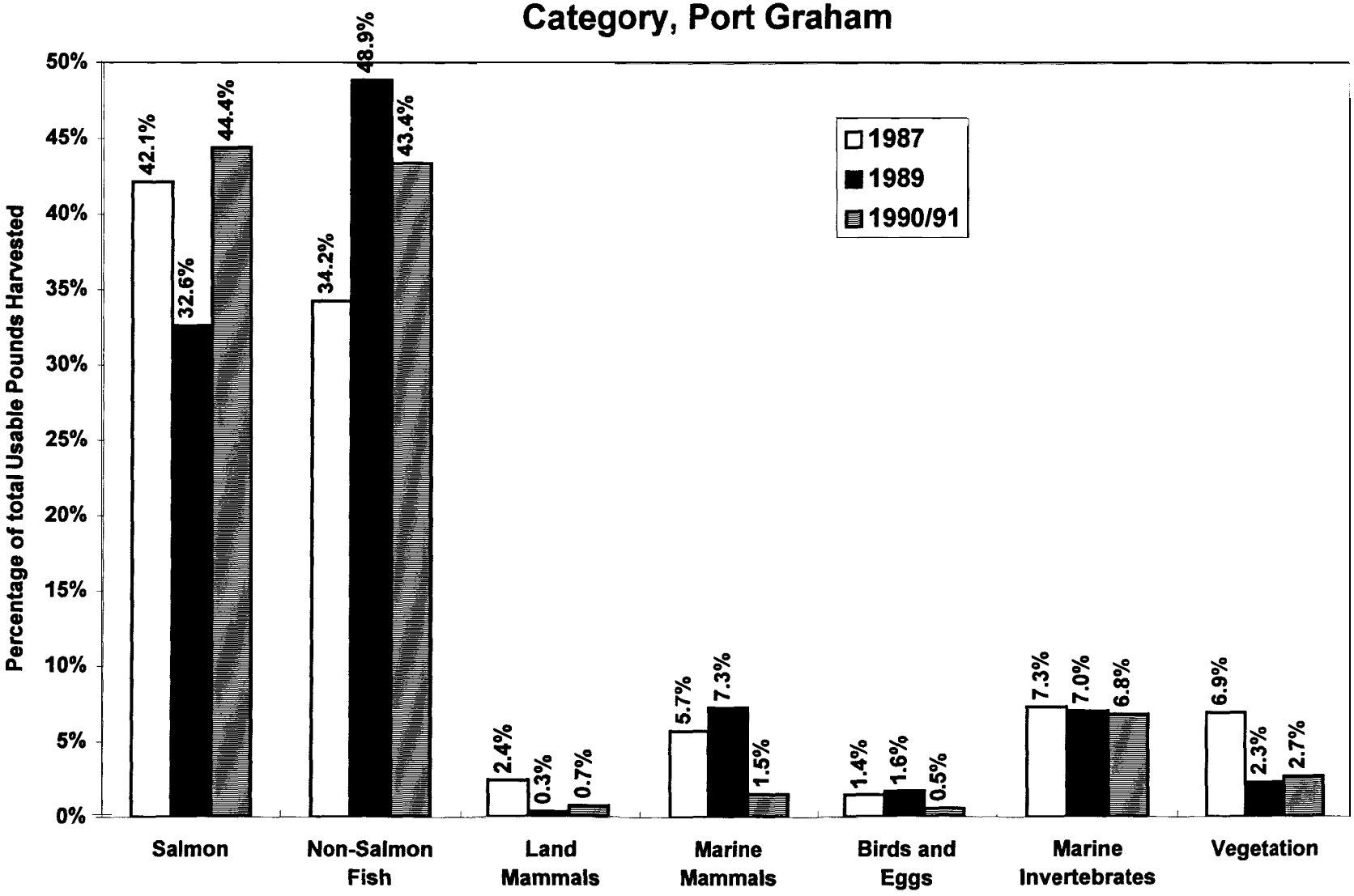


Figure 38. Percentage of Total Subsistence Harvest by Resource Category, Port Graham



mammal harvest levels at Port Graham continued a downward trend, from 13.1 pounds per person in 1987, to 8.9 pounds in 1989, and to 3.3 pounds in 1990/91 (Fig. 37).

As at Nanwalek, the average number of kinds of resources used by Port Graham households increased in 1990/91 compared to the year before (Fig. 39). The average was 17.4 kinds in 1990/91, and 11.2 kinds in 1989 (unadjusted values) The average for 1987, 21.5 kinds, was higher, however. The average number of kinds of resources harvested also increased, from 7.7 in 1989 to 11.0 in 1990/91, but remained below the average of 14.3 for 1987.

Levels of Participation

All the sampled Port Graham households used and harvested wild resources in 1990/91, and the vast majority received (97.8 percent) and gave away (89.1 percent) resources as well (Table 28). As shown in Figure 40, in the first post-spill year of 1989, the percentage of Port Graham's households which used fish other than salmon (77 percent), marine invertebrates (71 percent), land mammals (27 percent), and wild plants (79 percent) dropped in comparison with levels recorded for 1987 (94 percent, 98 percent, 72 percent, and 96 percent, respectively). In 1990/91, the percentage of Port Graham households which used three of these categories rose to approximate pre-spill levels. These were other fish (93.5 percent), marine invertebrates (97.8 percent), and wild plants (87.0 percent). While the percentage of households which used land mammals also increased to 50.0 percent, this remained below the 72 percent recorded for 1987.

The percentage of people in Port Graham who hunted, fished, or gathered wild foods increased in 1990/91 to 81.0 percent (the highest of the seven study communities) from the 73.2 percent reported for 1989 (Fig. 34, Table 24). Participation in hunting (18.2 percent), fishing (75.9 percent), and gathering (65.0 percent) were all up over the year before.

Assessments of Change

Regarding salmon uses at Port Graham, the overall assessment appeared to be, as one person put it, "Last year was a little better, but not normal." Households cited a continued decrease in salmon runs, but more time to harvest than in 1989 when spill clean up activities were occurring. Also, for some Port Graham households, there was a lessening concern about oil contamination of salmon or other fish. For example, one family reported that,

> We caught more salmon this last year [than the year before]. We got away from the fear of oil. We were getting some information about contamination of fish, that they were not really affected, and we had a little more time for [fishing].

Nevertheless, as in Nanwalek, concerns about contamination remained, as the following comments indicate.

Figure 39. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Port Graham

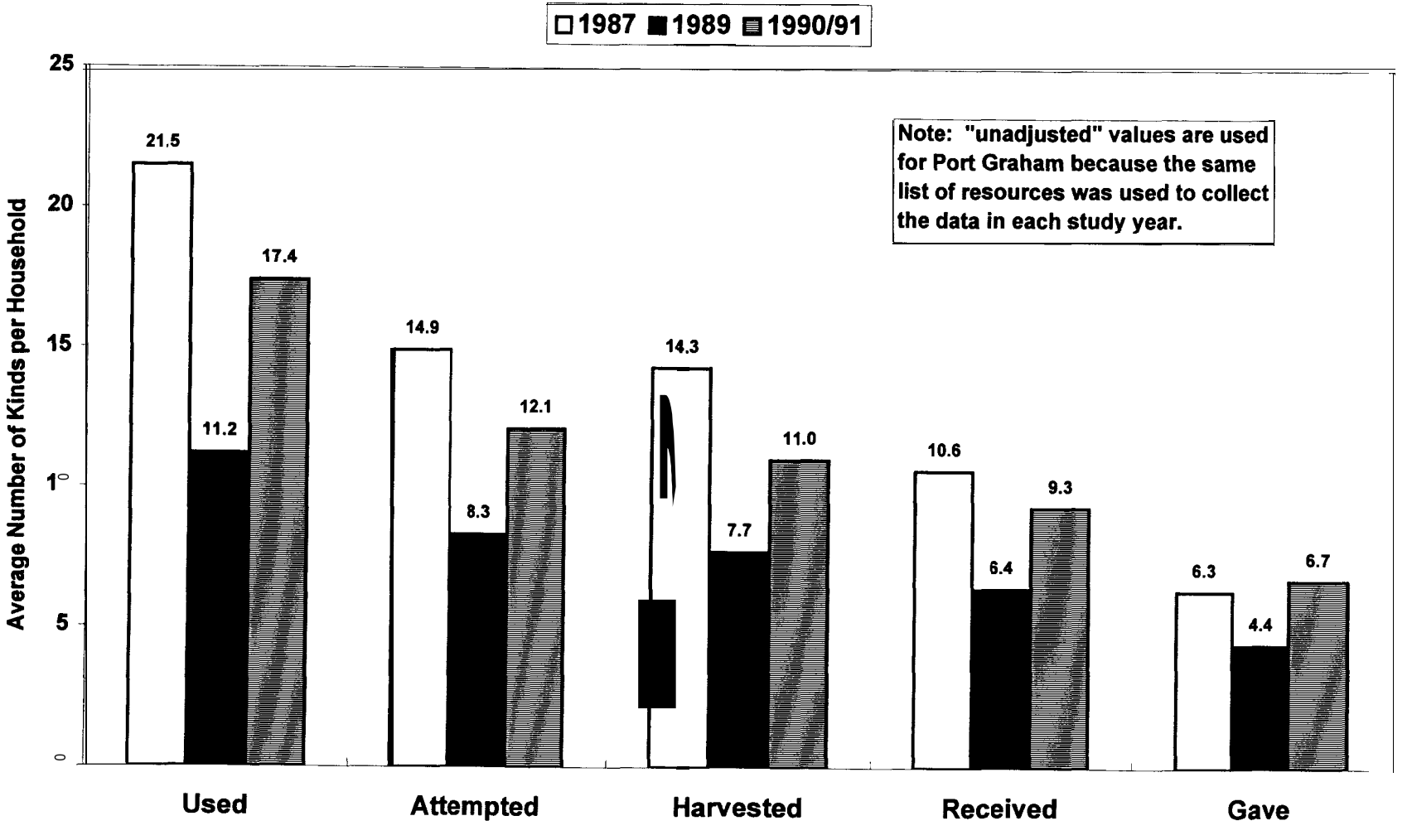
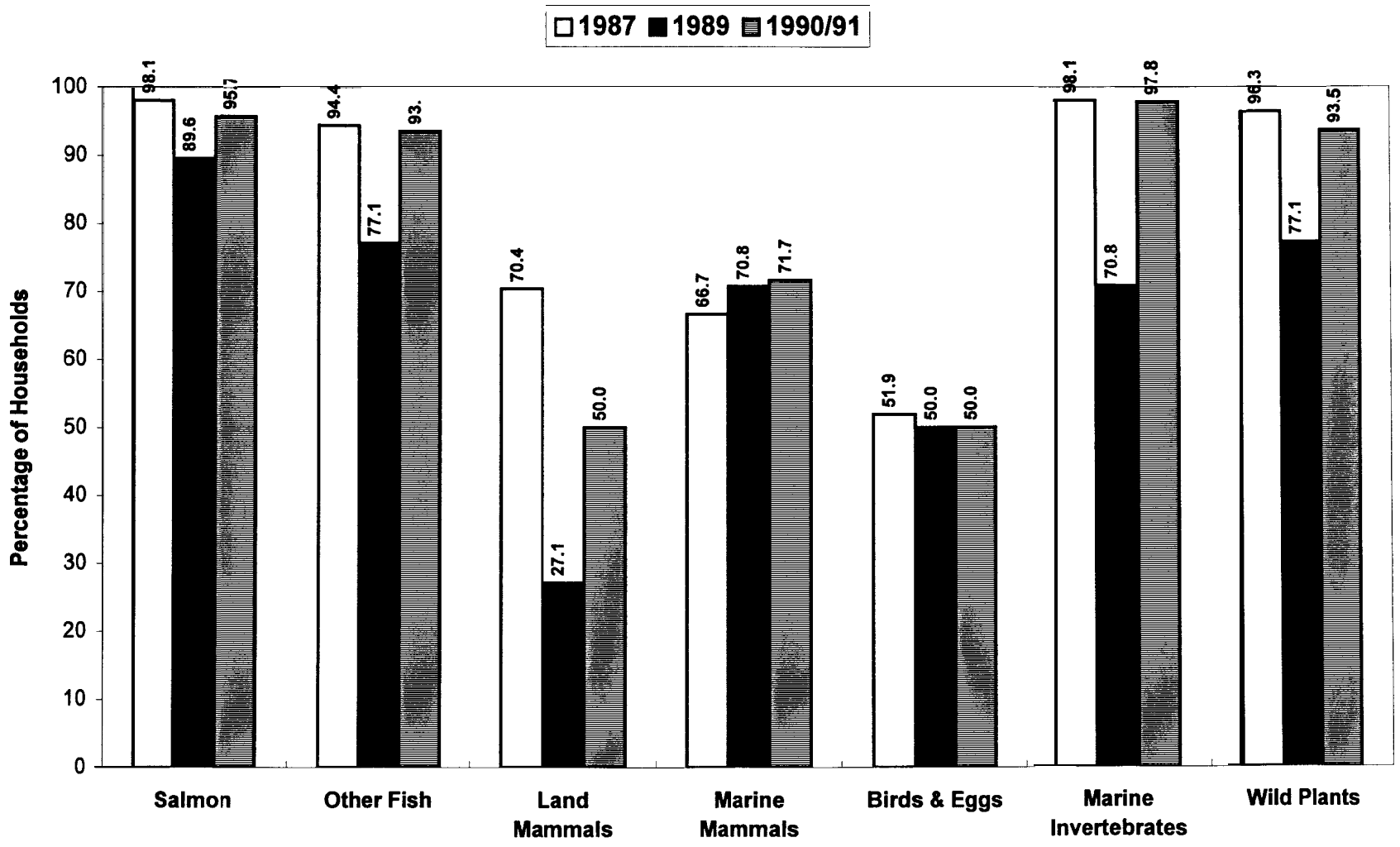


Figure 40. Percentage of Households Using Wild Resources by Category, Port Graham



> I think it was worse in 1989, but last summer [1990], I was still scared to eat [salmon]. You wonder if you could get poisoned or sick.
>
> In 1989, I hardly put up any [salmon] because of the spill, and in 1990 I put up [salmon] anyway. I'm still leery of this.

Quite a few households in Port Graham noted increases in their harvests and uses of fish other than salmon over levels in 1989. "It was better last year [than the year before]. We caught more, and more people were out and fishing," reported one fisherman. Another said,

> There was a big increase [in harvests] in 1990 over 1989. We had a great need and were willing to take the risk of contamination because we needed the food and nutrition.

Concerns about possible contamination of marine invertebrates remained in Port Graham in the second year after the *Exxon Valdez* spill. A number of households also reported on their observations about a general scarcity of these resources. As in Tatitlek, octopus appeared to be a major concern.

> There are fewer octopus than last year. They have been decreasing. There used to be lots, but not many anymore.
>
> [The harvest] is up from 1989, but much lower than before the spill. We are still leery of contamination. We don't go for snails like we used to.
>
> It's getting risky. We have to get those bidarkies way outside by Homer. And I think the oil spill has something to do with it. I don't know if they are finding tar balls [any more].
>
> I think they [shellfish] are very scarce. You really have to look to get any shellfish or bidarkies. You can't go down the beach like we used to.

As in Nanwalek, Chenega Bay, and Tatitlek, respondents in Port Graham perceived a reduction in subsistence harvests of marine mammals and an overall decline in the availability of seals and sea lions. Comments such as "They [seals] are getting more and more scarce these days," "I didn't see many seals or any sea lions at all," and "We usually get one seal, but we got nothing this year" were typical.

OUZINKIE

Harvest Levels and Species Used

As shown in Figure 18, subsistence harvests in Ouzinkie in 1990/91 averaged 205.2 pounds per person, up sharply from 88.9 pounds per person the year before (1989). However, levels of subsistence use in this village remained below pre-spill averages, which measured 376.1 pounds per person in 1982/83 and 404.8 pounds per person in 1986.

These findings match respondents' own assessments of subsistence use levels in Ouzinkie since the spill (Table 19). Most of Ouzinkie's households (71.4 percent) said that their uses had increased in

1990/91 over the year before. Additionally, 44 percent said that their uses had returned to normal, and 8 percent said their uses were even higher than before the spill (Table 20). On the other hand, the largest number of households in Ouzinkie (48 percent) said that their subsistence uses had remained below their normal pre-spill levels.

In 1990/91, harvests of resources at Ouzinkie increased in every category compared to the year before, but with a few exceptions did not reach pre-spill levels (Table 29, Fig. 41, Fig. 42). For example, harvests of salmon increased from 29.4 pounds per person in 1989 to 75.5 pounds in 1990/91 (36.8 percent of the 1990/91 harvest). Nevertheless, the 1990/91 salmon harvest was well below those of 1982/83 (176.0 pounds) and 1986 (193.5 pounds). Marine invertebrates, marine mammals, and birds and eggs exhibited a similar pattern, while wild plant harvests were higher in 1990/91 (6.5 pounds per person) than in either of the two pre-spill years for which data are available.

In 1990/91, the largest increase in subsistence harvests over 1989 levels at Ouzinkie occurred in the other fish category. Harvests in 1990/91 averaged 68.2 pounds per person (33.2 percent), compared to just 14.6 pounds in 1989. Unlike most other categories, harvests of fish other than salmon basically matched those reported for the pre-spill years of 1982/83 (63.2 pounds per person) and 1986 (68.8 pounds per person) (Fig. 41).

The range of kinds of resources used per household in Ouzinkie rose to 13.9 kinds compared to just 7.6 kinds (adjusted values) in 1989, but below the 20.4 kinds estimated for 1982/83 and 16.0 kinds in 1986 (Fig. 43, Table 17). The average number of resources harvested also increased, from 5.5 in 1989 to 9.3 in 1990/91. Again, pre-spill estimates were higher, at 15.3 kinds harvested in 1982/83 and 11.9 kinds in 1986. The range of resources shared also was wider in Ouzinkie in the second year after the spill compared with 1989. The average household received 6.7 kinds of wild foods from others in 1990/91; in contrast, the average for 1989 was 3.2 kinds received. Before the spill, Ouzinkie households received on average 7.9 kinds of wild resources in 1986. Similarly, in 1990/91, the average Ouzinkie household gave away 4.6 kinds of subsistence resources compared to 2.8 kinds in 1989 and 4.9 kinds in 1986.

Levels of Participation

With the exception of marine mammals, participation in the use of various resource categories in Ouzinkie was up notably in 1990/91 compared to the first post-spill year of 1989 (Fig. 44). In most cases, the percentage of households using each category was similar to that recorded in pre-spill study years. Overall, in 1990/91 all of the sampled Ouzinkie households used wild resources, 98 percent harvested wild foods, 96 percent received gifts of subsistence resources, and 77 gave resources to other households (Table 29). Almost every household used salmon (98 percent), other fish (93 percent), marine invertebrates (94 percent), and plants (96 percent; includes wood; 94.3 percent used edible plants). Most also used land mammals (81 percent) and birds and eggs (81 percent).

Table 29. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Ouzinkie, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	98.1	98.1	96.2	77.4	41,583.15	704.80	205.24			11.00%	10.20%
Fish	100.0	79.2	79.2	81.1	62.3	29,114.54	493.47	143.70			12.10%	11.40%
Salmon	98.1	75.5	75.5	54.7	56.6	15,298.76	259.30	75.51	3,261.14	55.27	12.60%	11.70%
Chum Salmon	35.8	28.3	28.3	9.4	17.0	1,399.85	23.73	6.91	246.02	4.17	20.70%	19.90%
Coho Salmon	88.7	64.2	64.2	39.6	39.6	7,455.54	126.37	36.80	1,212.28	20.55	13.20%	12.70%
Chinook Salmon	22.6	11.3	11.3	13.2	7.5	210.14	3.56	1.04	23.93	0.41	33.30%	32.70%
Pink Salmon	62.3	43.4	43.4	24.5	18.9	960.74	16.28	4.74	414.11	7.02	15.20%	13.90%
Sockeye Salmon	84.9	56.6	56.6	41.5	39.6	5,125.88	86.88	25.30	1,331.40	22.57	15.90%	15.00%
Unknown Salmon	3.8	1.9	1.9	1.9	1.9	146.61	2.48	0.72	33.40	0.57	64.00%	63.90%
Non-Salmon Fish	92.5	66.0	66.0	67.9	35.8	13,815.79	234.17	68.19			14.70%	14.30%
Cod	58.5	28.3	28.3	41.5	20.8	960.03	16.27	4.74	300.01	5.08	19.90%	19.50%
Pacific Cod (Gray)	58.5	28.3	28.3	41.5	20.8	960.03	16.27	4.74	300.01	5.08	19.90%	19.50%
Greenling	20.8	15.1	15.1	7.5	5.7	183.68	3.11	0.91	73.47	1.25	27.30%	29.00%
Lingcod	13.2	9.4	9.4	5.7	5.7	146.94	2.49	0.73	36.74	0.62	35.80%	35.50%
Unknown Greenling	9.4	7.5	7.5	1.9	0.0	36.74	0.62	0.18	36.74	0.62	41.30%	39.60%
Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Halibut	77.4	39.6	39.6	52.8	32.1	9,979.18	169.14	49.25	276.43	4.69	16.80%	16.70%
Herring	5.7	3.8	3.8	3.8	3.8	90.17	1.53	0.45	15.03 gal	0.25	59.30%	60.30%
Rockfish	43.4	32.1	32.1	22.6	15.1	1,265.16	21.44	6.24	613.38	10.40	35.10%	25.00%
Black Rockfish (black bass)	22.6	20.8	20.8	1.9	5.7	713.01	12.08	3.52	475.34	8.06	45.10%	43.20%
Red Rockfish	34.0	18.9	17.0	20.8	9.4	552.15	9.36	2.73	138.04	2.34	22.60%	22.20%
Unknown Rockfish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sculpin	3.8	3.8	3.8	1.9	0.0	7.24	0.12	0.04	14.47	0.25	51.10%	49.20%
Irish Lord	3.8	3.8	3.8	1.9	0.0	7.24	0.12	0.04	14.47	0.25	51.10%	49.20%
Unknown Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eel	1.9	0.0	0.0	1.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Skates	1.9	0.0	0.0	1.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Grayling	1.9	1.9	1.9	0.0	0.0	1.56	0.03	0.01	2.23	0.04	64.00%	63.20%
Trout and Char	50.9	43.4	43.4	15.1	11.3	1,328.77	22.52	6.56	949.12	16.09	23.10%	22.60%
Char (general)	39.6	34.0	34.0	9.4	7.5	918.89	15.57	4.54	656.35	11.12	30.40%	30.10%
Dolly Varden	39.6	34.0	34.0	9.4	7.5	918.89	15.57	4.54	656.35	11.12	30.40%	30.10%
Trout	22.6	20.8	20.8	5.7	5.7	409.88	6.95	2.02	292.77	4.96	29.10%	28.60%
Rainbow Trout	20.8	18.9	18.9	3.8	3.8	394.30	6.68	1.95	281.64	4.77	30.20%	29.70%
Steelhead	3.8	1.9	1.9	1.9	1.9	15.58	0.26	0.08	11.13	0.19	64.00%	64.30%

Table 29. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Ouzinkie, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Game	81.1	54.7	47.2	60.4	35.8	4,716.44	79.94	23.28			11.70%	10.90%
Big Game	81.1	54.7	47.2	60.4	34.0	4,580.63	77.64	22.61			11.90%	11.00%
Brown Bear	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Caribou	1.9	0.0	0.0	1.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Deer	71.7	41.1	43.4	39.6	32.1	3,077.80	52.17	15.19	71.25	1.21	11.60%	10.70%
Deer, Male	58.5	41.5	35.8	30.2	26.4	1,875.53	31.79	9.26	43.42	0.74	13.70%	13.10%
Deer, Female	35.8	32.1	30.2	15.1	22.6	1,202.26	20.38	5.93	27.83	0.47	14.90%	13.90%
Deer, Sex Unknown	3.8	0.0	0.0	3.8	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Elk	58.5	17.0	11.3	49.1	11.3	1,502.83	25.47	7.42	6.68	0.11	24.80%	24.50%
Goat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Moose	1.9	0.0	0.0	1.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Reindeer	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wild Cow	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	17.0	17.0	17.0	1.9	1.9	135.81	2.30	0.67	67.91	1.15	27.20%	26.90%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Hare	17.0	17.0	17.0	1.9	1.9	135.81	2.30	0.67	67.91	1.15	27.20%	26.90%
Snowshoe Hare	17.0	17.0	17.0	1.9	1.9	135.81	2.30	0.67	67.91	1.15	27.20%	26.90%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Mammals	35.8	13.2	11.3	32.1	13.2	2,101.74	35.62	10.37			33.40%	33.20%
Whale	7.5	0.0	0.0	7.5	0.0	0.00	0.00	0.00	0.∞	0.00	0.00%	0.00%
Bowhead	7.5	0.0	0.0	7.5	0.0	0.00	0.00	0.00	0.∞	0.00	0.00%	0.00%
Unknown Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.∞	0.00	0.00%	0.00%
Seal	30.2	13.2	11.3	24.5	13.2	1,433.81	24.30	7.08	25.∞	0.43	27.10%	26.80%
Harbor Seal	30.2	13.2	11.3	24.5	13.2	1,433.81	24.30	7.08	25.∞	0.43	27.10%	26.80%
Stellar Sea Lion	1.9	1.9	1.9	1.9	1.9	667.92	11.32	3.30	3.34	0.06	64.00%	63.90%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Birds and Eggs	81.1	56.6	56.6	49.1	34.0	1,510.93	25.61	7.46			14.50%	13.80%
Birds	73.6	47.2	47.2	45.3	28.3	1,249.44	21.18	6.17			15.60%	14.90%
Upland Game Birds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.∞	0.00	0.00%	0.00%
Ptarmigan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.∞	0.00	0.00%	0.00%

Table 29. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Ouzinkie, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Migratory Birds	73.6	47.2	47.2	45.3	28.3	1,249.44	21.18	6.17			15.60%	14.90%
Waterfowl	73.6	47.2	47.2	45.3	28.3	1,248.44	21.16	6.16			15.60%	15.00%
Ducks	73.6	47.2	47.2	45.3	28.3	1,232.41	20.89	6.08	1,504.50	25.50	16.00%	15.10%
Eider	22.6	17.0	17.0	11.3	11.3	86.38	1.46	0.43	53.99	0.92	19.80%	18.80%
Scoter	41.5	34.0	34.0	15.1	18.9	219.41	3.72	1.08	243.79	4.13	18.90%	18.00%
Harlequin	22.6	17.0	17.0	7.5	11.3	31.73	0.54	0.16	63.45	1.08	24.20%	23.30%
Goldeneye	52.8	35.8	35.8	20.8	20.8	222.64	3.77	1.10	278.30	4.72	15.80%	15.70%
Bufflehead	26.4	20.8	20.8	7.5	9.4	38.29	0.65	0.19	95.74	1.62	21.90%	22.10%
Merganser	15.1	13.2	13.2	3.8	7.5	32.73	0.55	0.16	54.55	0.92	25.60%	26.20%
Scaup	9.4	9.4	9.4	1.9	9.4	36.07	0.61	0.18	40.08	0.68	30.50%	30.30%
Mallard	49.1	35.8	35.8	18.9	22.6	251.03	4.25	1.24	251.03	4.25	17.90%	16.80%
Pintail	18.9	15.1	15.1	5.7	9.4	93.95	1.59	0.46	117.44	1.99	23.70%	23.90%
Wigeon	1.9	1.9	1.9	0.0	0.0	4.68	0.08	0.02	6.68	0.11	64.00%	62.10%
Teal	7.5	7.5	7.5	1.9	3.8	14.36	0.24	0.07	47.87	0.81	35.90%	35.40%
Gadwall	1.9	1.9	1.9	0.0	0.0	3.56	0.06	0.02	4.45	0.08	64.00%	64.30%
Oldsquaw	24.5	20.8	20.8	7.5	17.0	187.02	3.17	0.92	233.77	3.96	24.10%	23.80%
Ducks, Unknown	13.2	3.8	3.8	13.2	1.9	10.55	0.18	0.05	13.36	0.23	47.30%	47.20%
Geese	1.9	1.9	1.9	1.9	1.9	16.03	0.27	0.08			64.00%	63.90%
Emperor Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
White-fronted Geese	1.9	1.9	1.9	1.9	1.9	16.03	0.27	0.08	6.68	0.11	64.00%	63.90%
Canada Geese (general)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Canada Geese, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shorebirds	3.8	3.8	3.8	1.9	1.9	1.00	0.02	0.00	10.02	0.17	57.20%	56.90%
Common Snipe	3.8	3.8	3.8	1.9	1.9	1.00	0.02	0.00	10.02	0.17	57.20%	56.90%
Eggs	54.7	39.6	39.6	20.8	15.1	261.49	4.43	1.29	920.62	15.60	19.90%	19.40%
Seabird Eggs	54.7	39.6	39.6	20.8	15.1	257.48	4.36	1.27	891.68	15.11	19.90%	19.30%
Gull Eggs	52.8	39.6	39.6	18.9	15.1	255.48	4.33	1.26	851.60	14.43	19.90%	19.30%
Tern Eggs	7.5	5.7	5.7	1.9	1.9	2.00	0.03	0.01	40.08	0.68	36.20%	36.30%
Shorebird Eggs	1.9	1.9	1.9	0.0	0.0	0.67	0.01	0.00	6.68	0.11	64.00%	63.90%
Waterfowl Eggs	1.9	1.9	1.9	0.0	0.0	3.34	0.06	0.02	22.26	0.38	64.00%	64.30%
Duck Eggs	1.9	1.9	1.9	0.0	0.0	3.34	0.06	0.02	22.26	0.38	64.00%	64.30%

Table 29. E ted Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Ouzinkie, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Marine Invertebrates	94.3	75.5	75.5	62.3	43.4	2,822.84	47.84	13.93			13.00%	11.70%
Clams	86.8	69.8	69.8	43.4	28.3	1,404.91	23.81	6.93	468.30 gal	7.94	11.20%	10.00%
Butter Clams	86.8	69.8	69.8	41.5	28.3	1,244.61	21.10	6.14	414.87 gal	7.03	11.50%	10.30%
Razor Clams	5.7	5.7	5.7	1.9	3.8	86.83	1.47	0.43	28.94 gal	0.49	50.50%	50.30%
Pacific Littleneck Clams (Steamers)	20.8	17.0	17.0	7.5	3.8	72.64	1.23	0.36	24.21 gal	0.41	26.30%	25.70%
Unknown Clams	1.9	1.9	1.9	0.0	0.0	0.83	0.01	0.00	0.28 gal	0.00	64.00%	63.90%
Cockles	11.3	9.4	9.4	3.8	1.9	54.67	0.93	0.27	18.22 gal	0.31	41.00%	39.10%
Geoducks	3.8	3.8	3.8	0.0	1.9	66.79	1.13	0.33	22.26 gal	0.38	50.30%	49.40%
Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mussels	9.4	9.4	9.4	0.0	0.0	8.35	0.14	0.04	5.57 gal	0.09	27.50%	27.00%
Crabs	52.8	17.0	17.0	41.5	15.1	705.22	11.95	3.48	479.79	8.13	26.20%	26.40%
Dungeness Crab	34.0	9.4	9.4	26.4	5.7	84.94	1.44	0.42	121.34	2.06	33.90%	34.40%
King Crab	17.0	3.8	3.8	15.1	3.8	153.62	2.60	0.76	66.79	1.13	45.50%	44.50%
Tanner Crab	39.6	13.2	13.2	28.3	15.1	466.66	7.91	2.30	291.66	4.94	25.10%	24.60%
Chitons (bidarkis)	64.2	54.7	54.7	18.9	22.6	325.06	5.51	1.60	81.26 gal	1.38	19.30%	17.40%
Chitons (small)	64.2	54.7	54.7	18.9	22.6	325.06	5.51	1.60	81.26 gal	1.38	19.30%	17.40%
Octopus	32.1	22.6	22.6	15.1	5.7	229.32	3.89	1.13	57.33	0.97	27.30%	27.70%
Sea Cucumber	1.9	0.0	0.0	1.9	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Sea Urchin	20.8	18.9	18.9	3.8	5.7	26.30	0.45	0.13	52.60 gal	0.89	35.30%	34.70%
Shrimp	1.9	0.0	0.0	1.9	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Snails	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Limpets	3.8	3.8	3.8	0.0	0.0	2.22	0.04	0.01	1.48 gal	0.03	50.40%	49.80%
Plants and Berries	94.3	90.6	90.6	24.5	37.7	1,316.66	22.32	6.50			9.80%	9.70%
Berries	92.5	88.7	88.7	24.5	37.7	1,168.87	19.81	5.77	292.22 gal	4.95	9.00%	8.90%
Plants/Greens/Mushrooms	35.8	34.0	32.1	5.7	0.0	147.79	2.50	0.73	36.95 gal	0.63	26.10%	26.30%
Seaweed/Kelp (Food)	1.9	1.9	1.9	0.0	0.0	0.00	0.00	0.00	1.11	0.02	64.00%	0.00%
Seaweed/Kelp (Non-food)	9.4	9.4	9.4	0.0	3.8	0.00	0.00	0.00	345.09 gal	5.85	32.80%	0.00%
Wood	49.1	43.4	43.4	9.4	11.3	0.00	0.00	0.00	99.08 crd	1.68	14.90%	0.00%

SOURCE: Alaska Department of Fish and Game, Division Household Survey, 1991

Figure 41. Subsistence Harvests by Resource Category, Pounds Usable Weight per Capita, Ouzinkie

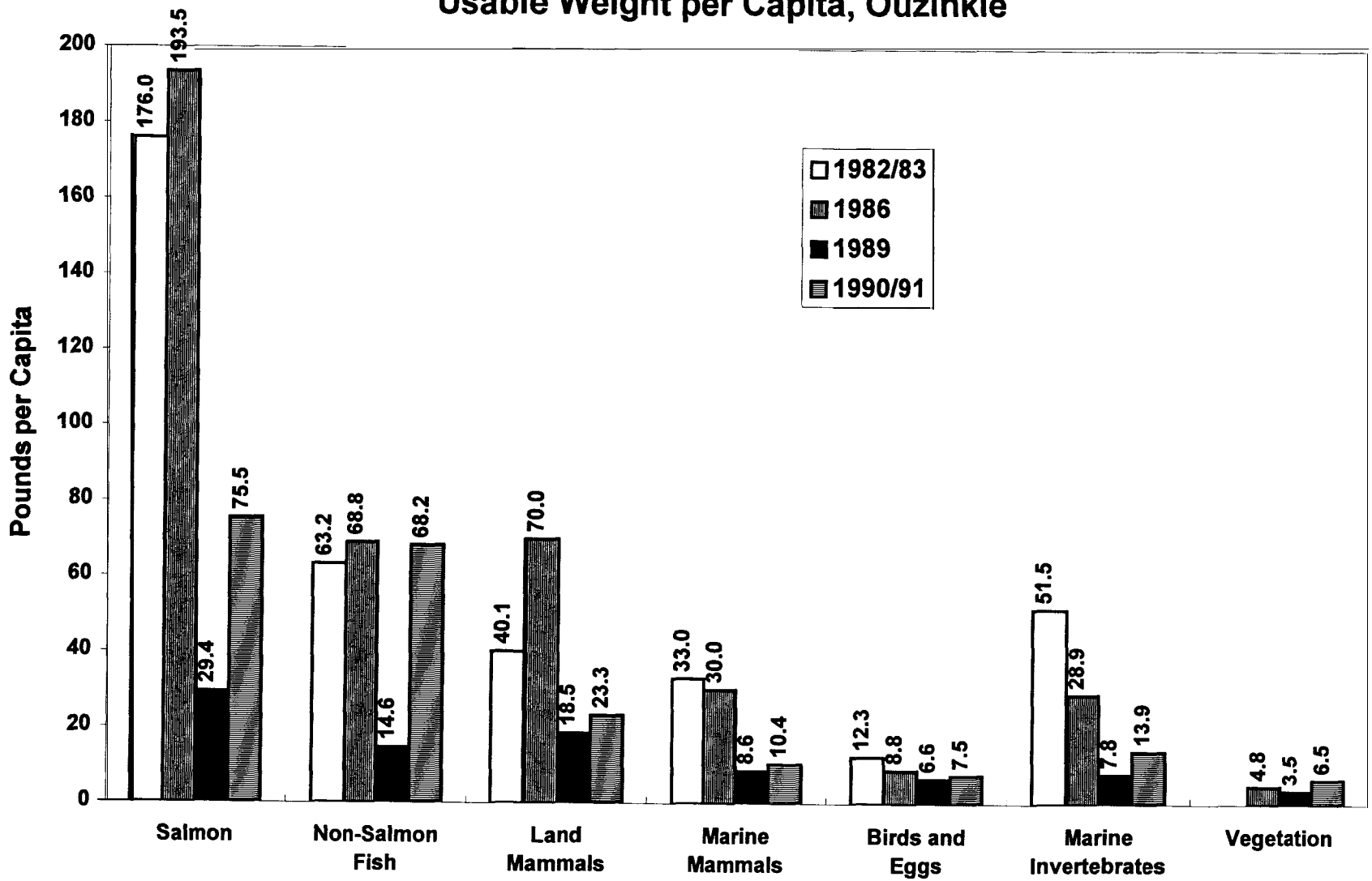


Figure 42. Percentage of Total Subsistence Harvest by Resource Category, Ouzinkie

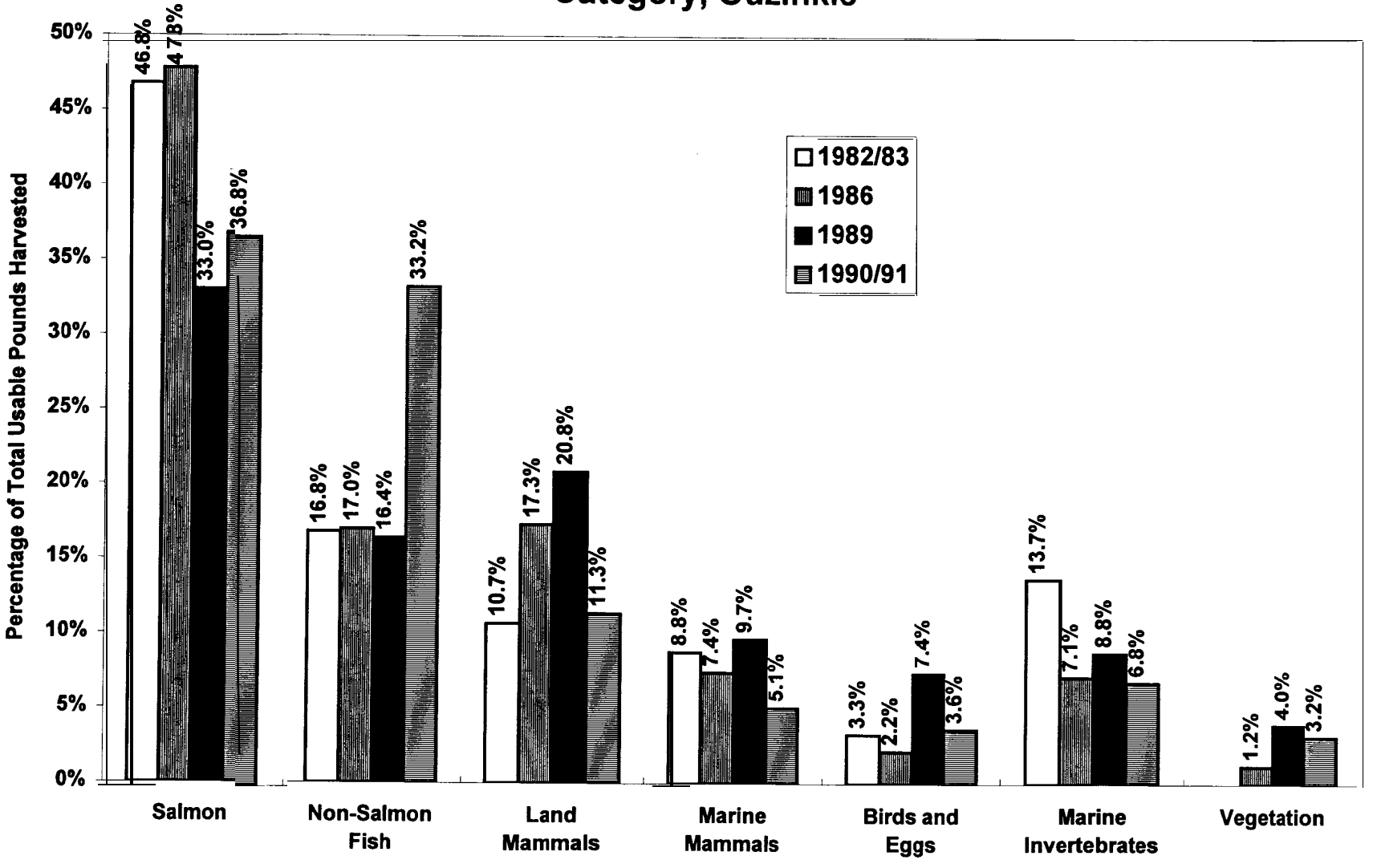


Figure 43. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Ouzinkie

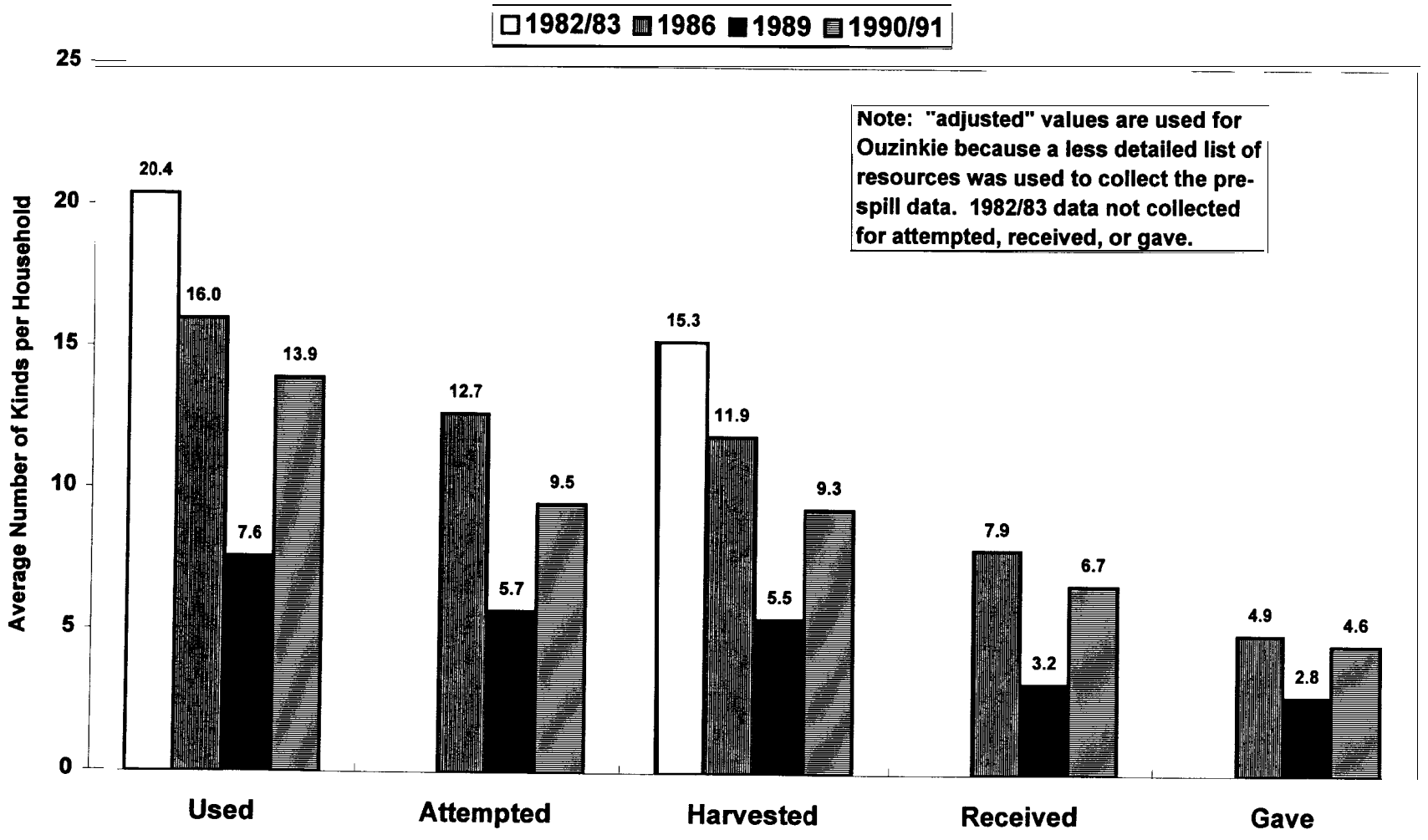
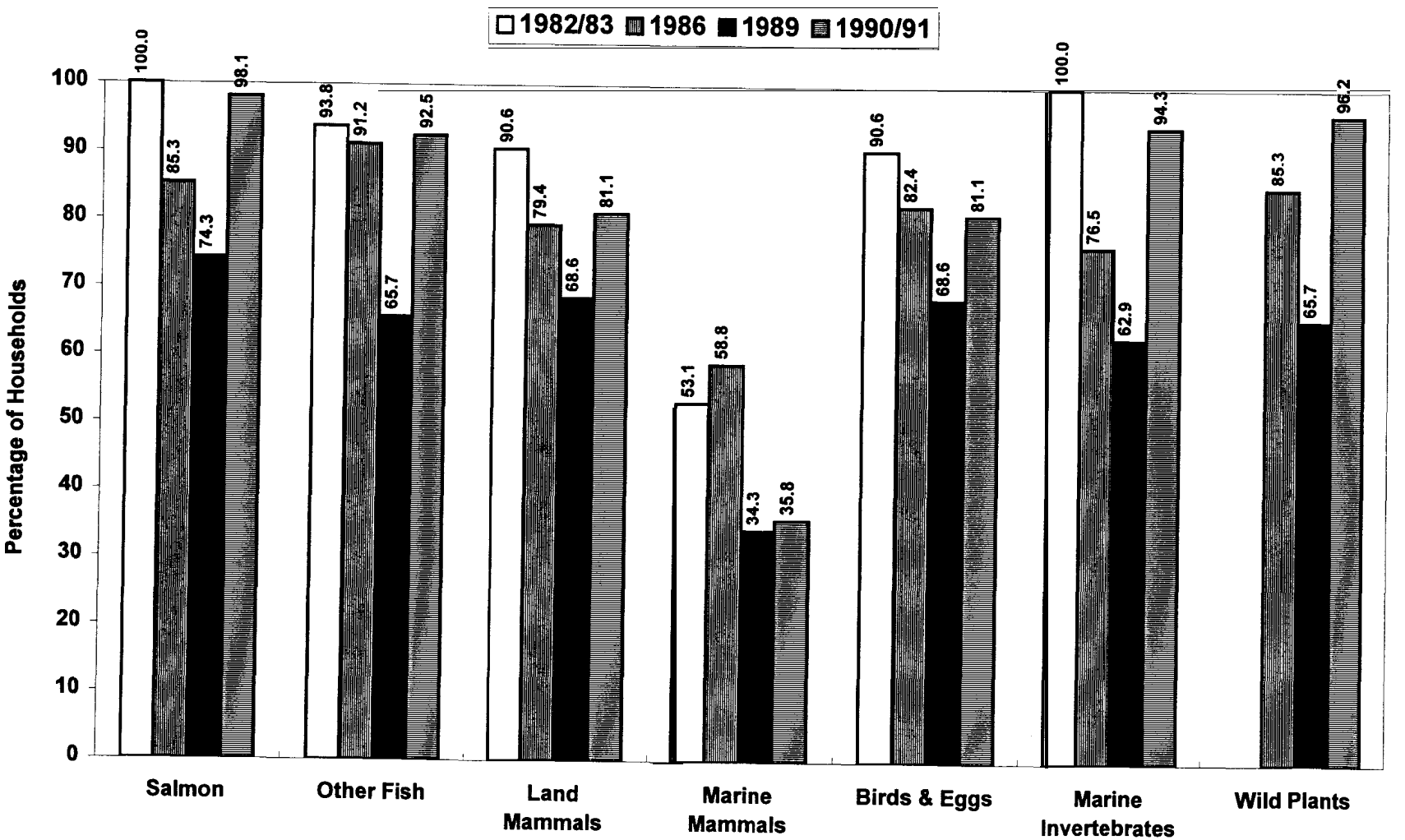


Figure 44. Percentage of Households Using Wild Resources by Category, Ouzinkie



An exception to the overall increase in levels of use of subsistence resources in Ouzinkie in 1990-91 was marine mammals. In the pre-spill study years of 1982/83 and 1986, just over half the sampled households used marine mammals (53 percent and 59 percent, respectively). This percentage dropped to 34 percent in 1989, and remained virtually unchanged at 36 percent in 1990/91 (Fig. 44).

At the individual level, participation in hunting (25.8 percent), fishing (55.6 percent), and gathering (74.2 percent) were all up in Ouzinkie compared to the year before (Table 24, Fig. 24). While just 55.9 percent of the people in Ouzinkie engaged in subsistence activities in 1989, 80.2 percent did so in 1990/91.

Assessments of Change

Consistent with the findings on harvest quantities just reviewed, most Ouzinkie households (64.7 percent) reported that they believed that their uses of subsistence foods increased in 1990/91 over 1989 levels (Table 19). For example, one man reported that he harvested no birds at all in the year after the spill, but that his harvests were "back to normal now because I can see what's going on with them and I got hungry for them." This same household used no salmon, other fish, shellfish, or deer in 1989 because of contamination concerns, but reported "back to normal levels" for 1990/91.

A second Ouzinkie household described a similar pattern. They used no salmon, other fish, or shellfish in the year after the oil spill because "we were too busy working on oil and worried about the effects of oil on the salmon." They reported improved harvests of salmon and other fish in 1990/91. Their shellfish harvests were up too, but they used these resources "halfheartedly, especially the shellfish we weren't sure of." In addition, this family has noted reduced populations of deer, marine mammals, and birds. Regarding the latter, they said that "There aren't as many since the oil spill. It seemed like it took months before we even seen any around."

Other households in Ouzinkie reported increased uses of certain resources over 1989, but continued reduced levels compared to before the spill. Overall, 48.0 percent of Ouzinkie households said their subsistence uses in 1990/91 had not returned to pre-spill levels (Table 20). For example, one family said their salmon harvest, which was zero in 1989, rose to about half of their normal catch in 1990. Their salmon uses were "tentative but recovering," they said. While they used "a tiny bit more clams" than in 1989, their harvests of marine invertebrates were well below those prior to the spill. They also noted a reduced deer population. Another household reported using no salmon, other fish, or shellfish until a year after the spill. Their harvests of salmon and other fish had improved in 1990, but remained well below former years. They used "a little more, but not much" shellfish, stating that "I'm still not sure about them. I used to eat a lot more. That was my upbringing."

LARSEN BAY

Harvest Levels and Species Used

The estimated per capita harvest of wild resources in Larsen Bay in 1990/91 was 344.5 pounds (Table 30). This was notably higher than the estimates for both 1989 (212.0 pounds per person) and 1986 (210.7 pounds per person). Indeed, after these two relatively low levels of subsistence harvests, the production level in Larsen Bay in the most recent study year began to approach that recorded for 1983/83 (425.9 pounds) as well as several other Kodiak villages such as Karluk (in 1986 and 1990/91) and Old Harbor (in 1982/83 and 1986) (Fig. 18).

There was also a relatively mixed pattern to Larsen Bay household's assessments of subsistence use levels in 1991/92 compared to other years (Table 19). While almost half the households (46.9 percent) said their uses were up in the second year after the spill compared to the first post-spill year, 34.4 percent said their uses had declined over the same period, and 18.8 percent said they had remained the same. Most households in Larsen Bay (46.4 percent) still believed that their uses in 1991/92 remained below pre-spill norms, although 35.7 percent said that uses in 1991/92 were similar to their pre-spill levels, and 17.9 percent said they were higher than before the spill (Table 20). The most households (6 households; 46.2 percent of those with lower uses) said that less "general interest or effort" was the reason for lower uses than before the spill. The second-most frequent reason (4 households; 30.8 percent) was concerns about the condition of the resources and food safety (Table 22).

Harvests quantities, as estimated in pounds per person, were up in Larsen Bay in 1990/91 in every resource category compared to both 1989 and 1986 (Fig. 45, Fig. 46). Compared to the first post-oil spill year, harvests of salmon (104.9 pounds per person), other fish (105.2 pounds), and marine invertebrates (54.9 pounds) increased substantially over 1989 levels (68.4 pounds, 37.9 pounds, and 34.7 pounds, respectively). More modest gains were recorded for land mammals (42.6 pounds in 1990/91, 40.3 pounds in 1989), marine mammals (23.2 pounds in 1990/91, 20.9 pounds in 1989), birds and eggs (4.7 pounds in 1990/91, 4.4 pounds in 1989), and wild plants (9.1 pounds in 1990/91, 5.5 pounds in 1989). Compared to 1982/83, there were notably lower harvests of salmon, land mammals, and marine mammals, but relatively higher harvests of other fish and marine invertebrates.

Larsen Bay households on average used a relatively wide range of kinds of wild resources in 1990/91, 16.5 per household (adjusted value). This compares with 12.7 in 1989 (Fig. 47). The range of resources harvested was also relatively great at 10.2 kinds per household, compared to 7.7 in 1989. The average household received 10.51 kinds of wild foods in 1990/91 and gave away on average 8.2 types, also up from the year before. The breadth of resources used, harvested, and shared at Larsen Bay were among the highest averages of any of the communities included in the 1990/91 study, generally second only to those of Nanwalek (using unadjusted or full values; see Table 17 and Fig. 19).

Table 30. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resoruces, Larsen Bay, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	97.1	97.1	94.3	82.9	50,004.48	1,250.11	344.52			14.20%	12.70%
Fish	97.1	77.1	74.3	88.6	71.4	30,487.82	762.20	210.05			16.80%	14.80%
Salmon	97.1	71.4	68.6	68.6	65.7	15,223.42	380.59	104.89	3,440.00	86.00	18.30%	17.20%
Chum Salmon	11.4	2.9	2.9	11.4	8.6	13.01	0.33	0.09	2.29	0.06	71.80%	70.10%
Coho Salmon	68.6	51.4	51.4	28.6	45.7	4,666.97	116.67	32.15	758.86	18.97	26.20%	24.60%
Chinook Salmon	40.0	28.6	28.6	22.9	20.0	923.15	23.08	6.36	105.14	2.63	36.60%	36.40%
Pink Salmon	37.1	34.3	31.4	5.7	20.0	437.49	10.94	3.01	188.57	4.71	30.60%	30.20%
Sockeye Salmon	94.3	65.7	65.7	62.9	62.9	9,182.80	229.57	63.27	2,385.14	59.63	17.70%	15.50%
Unknown Salmon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	94.3	65.7	65.7	71.4	54.3	15,264.40	381.61	105.17			19.50%	18.10%
Cod	51.4	31.4	31.4	37.1	31.4	2,212.57	55.31	15.24	691.43	17.29	29.30%	29.20%
Pacific Cod (Gray)	51.4	31.4	31.4	37.1	31.4	2,212.57	55.31	15.24	691.43	17.29	29.30%	29.20%
Greenling	11.4	2.9	2.9	8.6	2.9	9.14	0.23	0.06	2.29	0.06	71.80%	71.90%
Lingcod	11.4	2.9	2.9	8.6	2.9	9.14	0.23	0.06	2.29	0.06	71.80%	71.90%
Unknown Greenling	2.9	0.0	0.0	2.9	2.9	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Flounder	20.0	11.4	11.4	11.4	5.7	260.57	6.51	1.80	86.86	2.17	42.60%	40.10%
Halibut	85.7	54.3	54.3	65.7	51.4	11,205.03	280.13	77.20	310.39	7.76	22.30%	21.10%
Herring	11.4	0.0	0.0	11.4	5.7	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Rockfish	28.6	20.0	20.0	14.3	20.0	332.97	8.32	2.29	201.14	5.03	34.10%	30.50%
Black Rockfish (black bass)	20.0	17.1	17.1	8.6	17.1	276.00	6.90	1.90	184.00	4.60	35.80%	33.30%
Red Rockfish	17.1	8.6	8.6	11.4	11.4	45.71	1.14	0.31	11.43	0.29	43.20%	41.90%
Unknown Rockfish	2.9	2.9	2.9	2.9	2.9	11.26	0.28	0.08	5.71	0.14	71.80%	71.30%
Sculpin	8.6	2.9	2.9	5.7	5.7	5.71	0.14	0.04	11.43	0.29	71.80%	72.50%
Irish Lord	8.6	2.9	2.9	5.7	5.7	5.71	0.14	0.04	11.43	0.29	71.80%	72.50%
Unknown Sculpin	2.9	0.0	0.0	2.9	2.9	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Skates	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Grayling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Trout and Char	77.1	54.3	54.3	51.4	34.3	1,238.40	30.96	8.53	884.57	22.11	30.40%	29.30%
Char (general)	54.3	37.1	37.1	28.6	22.9	857.60	21.44	5.91	612.57	15.31	36.20%	35.00%
Dolly Varden	54.3	37.1	37.1	28.6	22.9	857.60	21.44	5.91	612.57	15.31	36.20%	35.00%
Trout	60.0	45.7	37.1	40.0	22.9	380.80	9.52	2.62	272.00	6.80	26.80%	26.30%
Rainbow Trout	14.3	20.0	8.6	5.7	5.7	12.80	0.32	0.09	9.14	0.23	48.40%	49.00%
Steelhead	57.1	40.0	34.3	40.0	20.0	368.00	9.20	2.54	262.86	6.57	27.70%	27.10%

Table 30. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resoruces, Larsen Bay, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Game	91.4	60.0	60.0	60.0	42.9	6,181.07	154.53	42.59			19.30%	17.50%
Big Game	91.4	60.0	60.0	60.0	40.0	6,151.36	153.78	42.38			19.30%	17.60%
Brown Bear	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Caribou	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Deer	91.4	60.0	60.0	57.1	37.1	6,008.50	150.21	41.40	140.23	3.51	19.20%	17.40%
Deer, Male	80.0	57.1	54.3	48.6	34.3	3,984.27	99.61	27.45	93.37	2.33	20.70%	18.90%
Deer, Female	48.6	42.9	42.9	25.7	31.4	1,974.86	49.37	13.61	45.71	1.14	20.30%	19.00%
Deer, Sex Unknown	8.6	2.9	2.9	8.6	2.9	49.37	1.23	0.34	1.14	0.03	71.80%	71.30%
Elk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Goat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Moose	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Reindeer	25.7	2.9	2.9	22.9	5.7	142.86	3.57	0.98	2.29	0.06	71.80%	73.00%
Wild Cow	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	8.6	8.6	8.6	5.7	8.6	29.71	0.74	0.20	8.29	0.46	55.20%	56.20%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Hare	5.7	5.7	5.7	5.7	5.7	29.71	0.74	0.20	4.86	0.37	57.20%	56.20%
Snowshoe Hare	5.7	5.7	5.7	5.7	5.7	29.71	0.74	0.20	4.86	0.37	57.20%	56.20%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	5.7	5.7	5.7	0.0	2.9	0.00	0.00	0.00	3.43	0.09	52.90%	0.00%
Marine Mammals	45.7	11.4	11.4	42.9	11.4	3,364.57	84.11	23.18			41.60%	42.30%
Whale	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Bowhead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Whale	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seal	45.7	11.4	11.4	40.0	11.4	1,536.00	38.40	10.58	27.43	0.69	39.30%	40.00%
Harbor Seal	45.7	11.4	11.4	40.0	11.4	1,536.00	38.40	10.58	27.43	0.69	39.30%	40.00%
Stellar Sea Lion	20.0	8.6	8.6	11.4	8.6	1,828.57	45.71	12.60	9.14	0.23	48.40%	49.00%
Sea Otter	2.9	2.9	2.9	2.9	0.0	0.00	0.00	0.00	6.86	0.17	71.80%	0.00%
Birds and Eggs	62.9	34.3	34.3	48.6	34.3	686.63	17.17	4.73			26.80%	25.80%
Birds	62.9	34.3	34.3	45.7	34.3	659.54	16.49	4.54			26.90%	26.00%
Upland Game Birds	22.9	17.1	14.3	8.6	2.9	38.40	0.96	0.26	54.86	1.37	42.00%	42.20%
Ptarmigan	22.9	17.1	14.3	8.6	2.9	38.40	0.96	0.26	54.86	1.37	42.00%	42.20%

Table 30. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resoruces, Larsen Bay, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Migratory Birds	62.9	34.3	34.3	45.7	34.3	621.14	[illegible]	4.28			27.80%	26.80%
Waterfowl	62.9	34.3	34.3	45.7	34.3	621.14	15.53	4.28			27.80%	26.80%
Ducks	62.9	34.3	34.3	45.7	34.3	621.14	15.53	4.28	817.14	20.43	28.00%	26.80%
Eider	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Scoter	28.6	14.3	14.3	20.0	14.3	72.00	1.80	0.50	80.00	2.00	39.60%	38.20%
Harlequin	5.7	5.7	5.7	2.9	2.9	4.57	0.11	0.03	9.14	0.23	56.30%	54.50%
Goldeneye	57.1	31.4	31.4	42.9	34.3	388.57	9.71	2.68	485.71	12.14	35.90%	35.50%
Bufflehead	14.3	11.4	11.4	11.4	8.6	25.60	0.64	0.18	64.00	1.60	38.40%	36.20%
Merganser	8.6	8.6	8.6	8.6	8.6	27.43	0.69	0.19	45.71	1.14	54.90%	52.90%
Scaup	2.9	2.9	2.9	2.9	2.9	12.34	0.31	0.09	13.71	0.34	71.80%	70.10%
Mallard	22.9	14.3	14.3	20.0	14.3	48.00	1.20	0.33	48.00	1.20	39.30%	38.50%
Pintail	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wigeon	2.9	2.9	2.9	2.9	2.9	8.00	0.20	0.06	11.43	0.29	71.80%	71.30%
Teal	8.6	5.7	5.7	5.7	2.9	7.54	0.19	0.05	25.14	0.63	65.50%	63.60%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	5.7	2.9	2.9	2.9	2.9	27.09	0.68	0.19	34.29	0.86	71.80%	73.00%
Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%	0.00%
Emperor Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.0	0.00%	0.00%
White-fronted Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.0	0.00%	0.00%
Canada Geese (general)	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.0	0.00%	0.00%
Canada Geese, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.0	0.00%	0.00%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.0	0.00%	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.0	0.00%	0.00%
Eggs	28.6	8.6	8.6	28.6	8.6	27.09	0.[illegible]	0.19	90.29	[illegible].2	40.50%	39.50%
Seabird Eggs	28.6	8.6	8.6	28.6	8.6	27.09	0.[illegible]	0.19	90.29	[illegible].2	40.50%	39.50%
Gull Eggs	28.6	8.6	8.6	28.6	8.6	27.09	0.[illegible]	0.19	90.29	[illegible].2	40.50%	39.50%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.0	0.00%	0.00%
Shorebird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.0	0.00%	0.00%
Waterfowl Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.0	0.00%	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.[illegible]	0.00	0.00	0.0	0.00%	0.00%

Table 30. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resoruces, Larsen Bay, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Marine Invertebrates	100.0	80.0	80.0	88.6	71.4	7,964.99	199.12	54.88			16.60%	16.80%
Clams	88.6	71.4	71.4	57.1	54.3	4,445.83	111.15	30.63	1,481.94 gal	37.05	20.00%	19.40%
Butter Clams	85.7	68.6	68.6	57.1	51.4	3,099.77	77.49	21.36	1,033.26 gal	25.83	20.40%	19.20%
Razor Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Pacific Littleneck Clams (Steamers)	68.6	57.1	57.1	42.9	45.7	1,346.06	33.65	9.27	448.69 gal	11.22	28.60%	29.20%
Unknown Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Cockles	14.3	11.4	11.4	5.7	5.7	11.55	0.29	0.08	3.85 gal	0.10	44.90%	44.90%
Geoducks	20.0	17.1	17.1	5.7	11.4	38.57	0.96	0.27	12.86 gal	0.32	30.60%	29.50%
Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mussels	25.7	17.1	17.1	14.3	11.4	42.43	1.06	0.29	28.29 gal	0.71	44.60%	44.90%
Crabs	88.6	31.4	31.4	77.1	25.7	1,376.21	34.41	9.48	870.06	21.75	38.00%	42.50%
Dungeness Crab	57.1	17.1	17.1	51.4	8.6	86.40	2.16	0.60	123.43	3.09	44.30%	43.10%
King Crab	51.4	17.1	17.1	40.0	11.4	312.80	7.82	2.16	136.00	3.40	63.30%	64.60%
Tanner Crab	77.1	20.0	20.0	65.7	20.0	977.01	24.43	6.73	610.63	15.27	39.80%	41.00%
Chitons (bidarkis)	48.6	31.4	31.4	34.3	22.9	224.09	5.60	1.54	56.02 gal	1.40	44.50%	44.70%
Chitons (small)	48.6	31.4	31.4	34.3	22.9	224.09	5.60	1.54	56.02 gal	1.40	44.50%	44.70%
Octopus	85.7	65.7	62.9	48.6	60.0	1,419.43	35.49	9.78	354.86	8.87	18.90%	18.70%
Sea Cucumber	20.0	11.4	11.4	8.6	8.6	190.86	4.77	1.31	95.43 gal	2.39	50.40%	51.00%
Sea Urchin	57.1	45.7	45.7	22.9	37.1	160.14	4.00	1.10	320.29 gal	8.01	39.10%	39.30%
Shrimp	11.4	5.7	5.7	5.7	2.9	49.14	1.23	0.34	24.57 gal	0.61	59.60%	60.70%
Snails	5.7	2.9	2.9	2.9	0.0	5.66	0.14	0.04	3.77 gal	0.09	71.80%	73.00%
Limpets	8.6	5.7	5.7	5.7	2.9	1.08	0.03	0.01	0.72 gal	0.02	58.50%	57.00%
Plants and Berries	82.9	68.6	68.6	57.1	48.6	1,319.41	32.99	9.09			15.40%	16.40%
Berries	80.0	62.9	62.9	48.6	45.7	1,184.00	29.60	8.16	296.00 gal	7.40	16.20%	17.10%
Plants/Greens/Mushrooms	34.3	40.0	34.3	11.4	17.1	135.41	3.39	0.93	33.85 gal	0.85	23.70%	24.30%
Seaweed/Kelp (Food)	2.9	0.0	0.0	2.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seaweed/Kelp (Non-food)	11.4	8.6	8.6	2.9	5.7	0.00	0.00	0.00	112.57 gal	2.81	45.30%	0.00%
Wood	82.9	68.6	68.6	31.4	31.4	0.00	0.00	0.00	158.86 crd	3.97	19.20%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Figure 45. Subsistence Harvests by Resource Category, Pounds Usable Weight per Capita, Larsen Bay

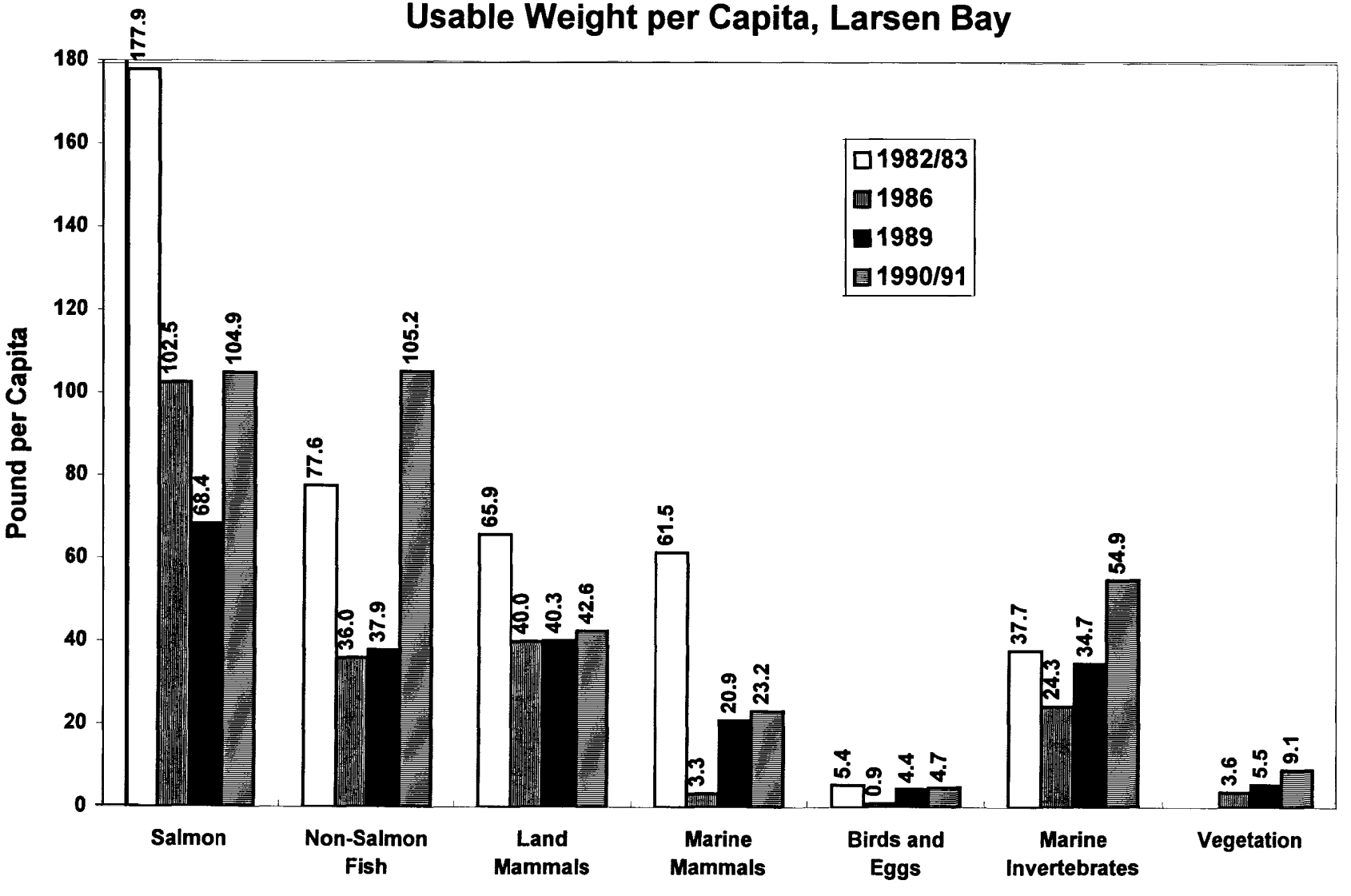


Figure 46. Percentage of Total Subsistence Harvest by Resource Category, Larsen Bay

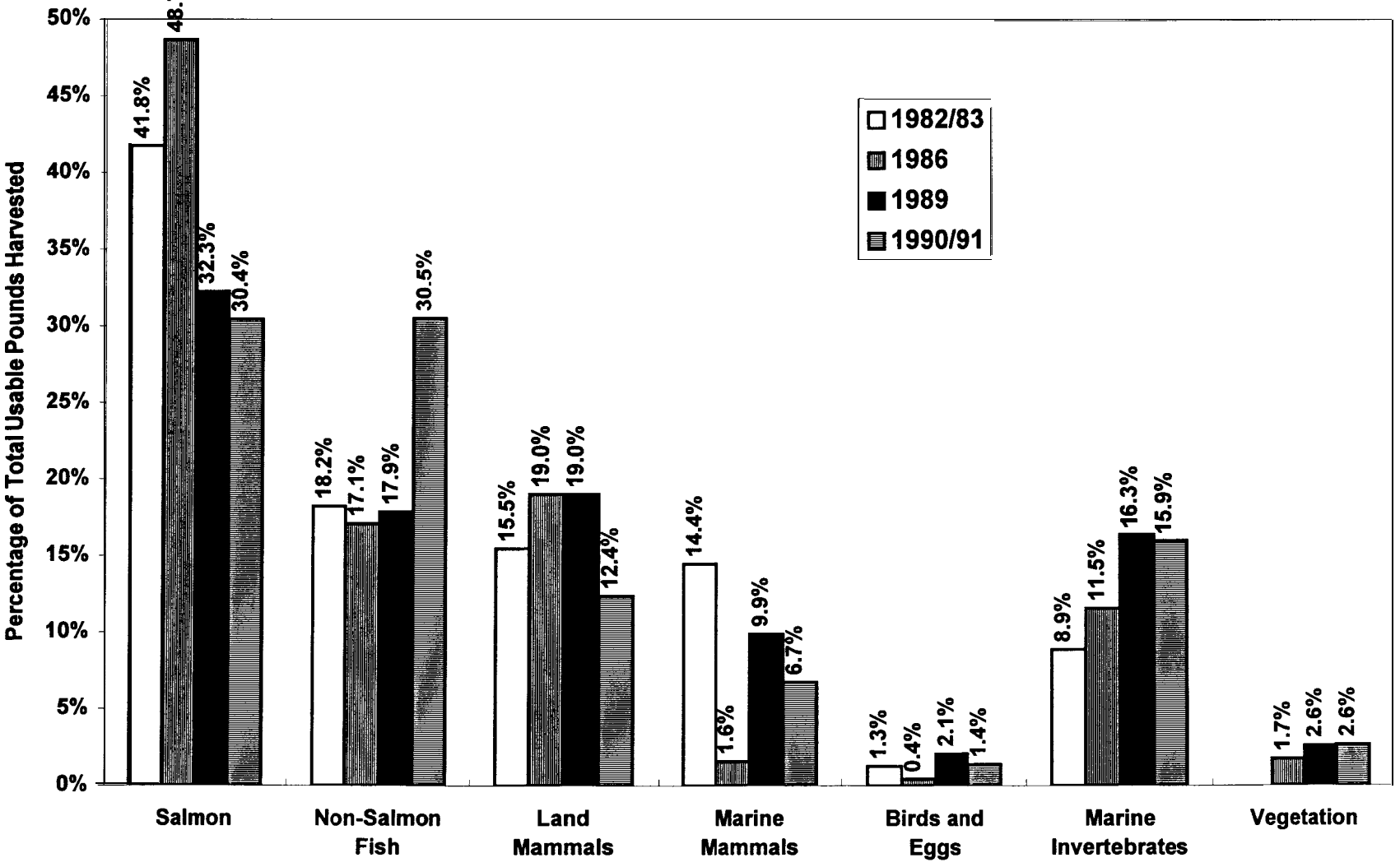
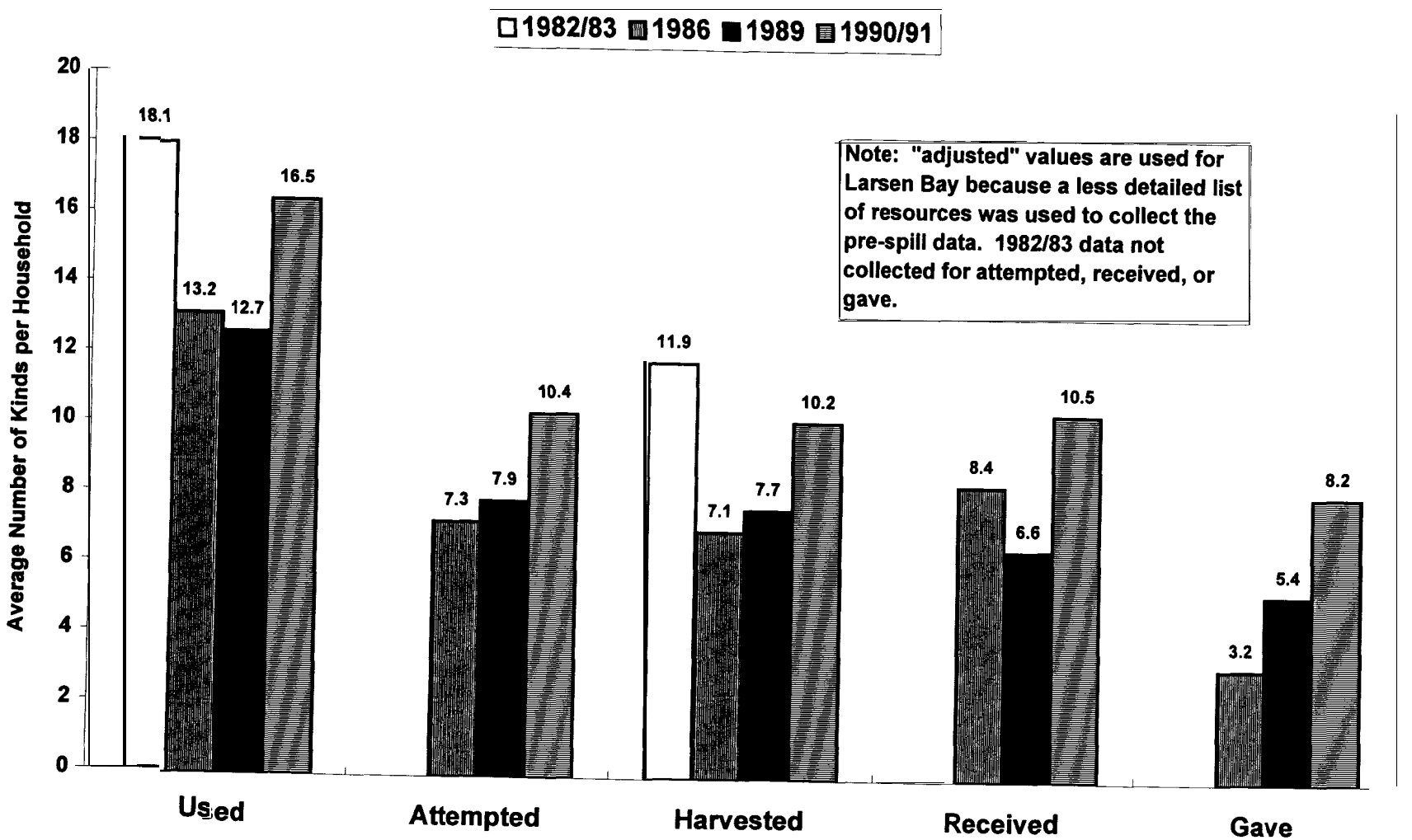


Figure 47. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Larsen Bay



Levels of Participation

As in previous study years, the level of participation of Larsen Bay's households in subsistence activities in 1990/91 was very high. Every household used wild foods, 97 percent harvested fish, game, or plants, 94 percent of the households received subsistence resources, and 83 percent gave resources to other households (Table 30). Unlike most of the other communities in the oil spill area, the percentage of Larsen Bay's households which used various categories of subsistence foods did not change significantly before or after the spill (Fig. 48). This percentage shows little variation at all for three categories: other fish (range 89 percent to 97 percent), marine invertebrates (range 89 percent to 100 percent), and land mammals (range 87 percent to 94 percent). In three of the four study years, the percentage of households using salmon was above 90 percent, dipping to 81 percent only in 1986. Although variation in uses of birds has been greater, ranging from a low of 49 percent using in 1986 to a high of 81 percent using in 1982/83, there is no evident pre-spill and post-spill difference. As in other Kodiak Island Borough villages, the percentage of households using marine mammals declined in Larsen Bay over the 1980s, although a decreasing trend in harvest and use is less apparent in this village than in the others.

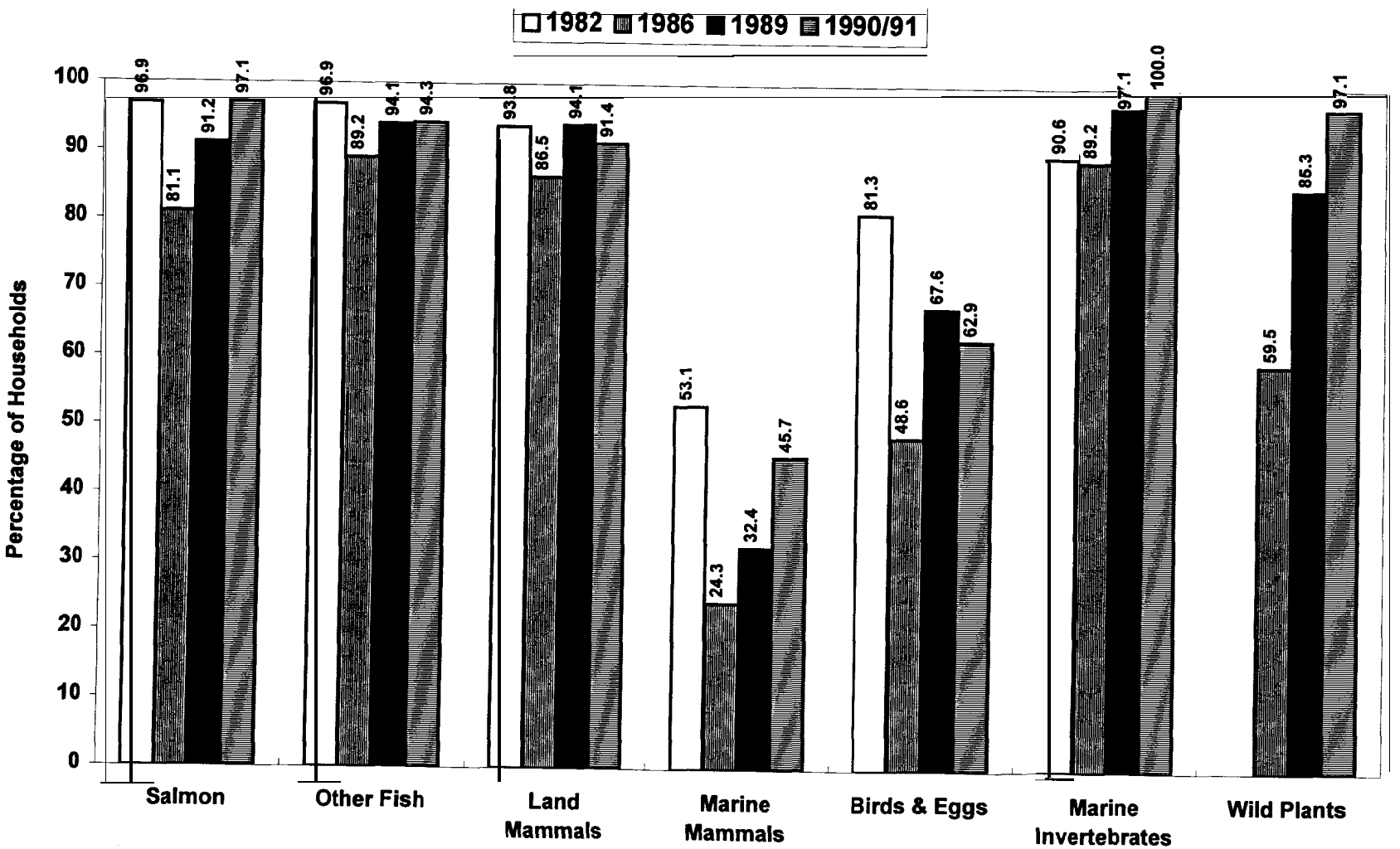
Participation in subsistence activities at the individual level was up slightly in Larsen Bay in 1990/91 compared to 1989. As shown in Table 24, 32.3 percent of Larsen Bay's population hunted in 1990/91, 63.8 percent fished (up from 54.8 percent the year before), and 64.6 percent gathered. Overall, 75.6 percent of the community engaged in subsistence activities in the study year, compared to 73.0 percent in 1989 (Fig. 24).

Assessments of Change

Overall, as noted above, household assessments of subsistence uses in Larsen Bay were mixed. There was a general perception among about half the households of increasing harvests compared to 1989 and a return to pre-spill norms, but for the other half, at least, a feeling that harvests of certain resources were still below pre-spill levels remained. For example, a very active harvesting household of a husband, wife, and small child said that their harvests of salmon and other fish in 1990/91 were "a little more than the oil spill summer," but they still wondered if the fish were safe to eat. Their harvests of shellfish went up too compared to 1989, when they "didn't get any after working on oily clam beds after the oil spill." They reported higher harvests of deer, marine mammals, and birds as well. A second household reported using more shellfish than the year before, but that their harvests "were not quite back to normal." Continuing concerns about contamination in this household led to reduced salmon harvests for a second year.

In contrast, an older household in Larsen Bay said they never stopped using salmon, other fish, or shellfish in 1989 because "they cleaned the beach in time," and their uses of these categories remained consistent with pre-spill years. However, they used more marine mammals in 1990/91 than in 1989

Figure 48. Percentage of Households Using Wild Resources by Category, Larsen Bay



because their grandson, a very active village provider, did not hunt in "the oil spill summer" but provided them with seal meat over the next year.

KARLUK

Harvest Levels and Species Used

Karluk's per capita harvest of fish and wildlife in 1990/91 was 401.6 pounds (Table 31), a substantial increase over the 254.9 pounds reported for the first post spill year of 1989 (Fig. 18). Nevertheless, only three Karluk households (20.0 percent) reported that they thought their overall levels of use had increased over the year before, while five others said their uses had remained the same (33.3 percent), and seven (46.7 percent) said their uses had decreased over the previous year (Table 19). Relatively low harvests of large land mammals and marine mammals may account for this prevailing perception of a continuing decline of subsistence harvests at Karluk. (See also Appendix J for households' assessments of changes at the resource category level.)

The subsistence harvest level for 1990/91 in Karluk was quite similar to the 385.2 pounds estimated for Karluk for 1986, but remained far below the 863.2 pounds estimated for 1982/83[4] (Fig. 18). This may account for the general perception in the community that, overall, subsistence uses in Karluk in 1990/91 were below pre-spill norms. Comparing subsistence uses in 1990/91 to before the spill, 35.7 percent of the Karluk households said that uses were about the same and 64.3 percent said uses were lower (Table 20). Resource scarcity was cited most frequently (by four households; 44.4 percent of those with lower uses) as the reason for these below normal use levels (Table 22).

With two exceptions, resource harvests at the category level at Karluk in 1990/91 increased over levels reported for 1989, and resembled those recorded for 1986 (Fig. 48, Fig. 49). As with harvests overall, however, most category level harvests in the study year were lower than 1982/83 quantities. For example, the estimated per capita harvest of salmon at Karluk in 1990/91 was 293.1 pounds, 73.0 percent of the total wild resource take. This was substantially higher than the 196.7 pounds per person reported for 1989, and even topped the 254.9 pounds recorded for 1986. However, salmon harvests remained less than half of the 582.5 pounds per person estimated for 1982/83.

The pattern for other fish at Karluk was similar to that of salmon. Harvests of this category at Karluk measured 50.8 pounds per person in 1990/91 (12.6 percent), compared to just 14.1 pounds in 1989 (5.5 percent) and 42.4 pounds in 1986 (11.0 percent). The 1982/83 per capita harvest was much higher, 100.7 pounds (11.7 percent). Harvests of marine invertebrates and plants were also higher in 1990/91 than in 1989. In fact, harvests of marine invertebrates matched those estimated for both 1982/83

[4] The harvest of 863.2 pounds per person reported for Karluk for 1982/83 is by far the largest subsistence harvest recorded for any community in the 1980s in southcentral or southwest Alaska, with the exception of some villages in the Iliamna Lake and Nushagak River subregions of Bristol Bay (Scott et al. 1997; cf. Fall and Walker 1993).

Table 31. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Karluk, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	94.1	94.1	100.0	88.2	33,211.11	1,747.95	401.56			27.20%	26.20%
Fish	94.1	88.2	88.2	76.5	70.6	28,440.99	1,496.89	343.88			24.60%	23.70%
Salmon	94.1	88.2	88.2	70.6	70.6	24,239.53	1,275.76	293.08	5,396.00	284.00	21.90%	22.60%
Chum Salmon	29.4	23.5	23.5	17.6	23.5	3,643.94	191.79	44.06	640.41	33.71	65.90%	64.60%
Coho Salmon	70.6	70.6	70.6	29.4	52.9	5,512.57	290.14	66.65	896.35	47.18	33.00%	34.10%
Chinook Salmon	58.8	47.1	47.1	35.3	41.2	2,276.60	119.82	27.53	259.29	13.65	36.90%	35.50%
Pink Salmon	52.9	47.1	47.1	29.4	41.2	1,597.25	84.07	19.31	688.47	36.24	38.00%	37.40%
Sockeye Salmon	88.2	82.4	82.4	64.7	64.7	11,209.16	589.96	135.53	2,911.47	153.24	15.20%	14.20%
Unknown Salmon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	94.1	64.7	64.7	70.6	52.9	4,201.46	221.13	50.80			35.50%	34.40%
Cod	23.5	11.8	11.8	17.6	11.8	114.45	6.02	1.38	35.76	1.88	64.40%	63.10%
Pacific Cod (Gray)	23.5	11.8	11.8	17.6	11.8	114.45	6.02	1.38	35.76	1.88	64.40%	63.10%
Greenling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lingcod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Greenling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Flounder	35.3	23.5	23.5	23.5	17.6	375.53	19.76	4.54	125.18	6.59	35.60%	34.00%
Halibut	82.4	52.9	52.9	64.7	47.1	3,268.11	172.01	39.51	90.53	4.76	37.50%	36.50%
Herring	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Rockfish	23.5	17.6	11.8	17.6	11.8	38.00	2.00	0.46	17.88	0.94	53.30%	47.00%
Black Rockfish (black bass)	17.6	11.8	5.9	17.6	5.9	20.12	1.06	0.24	13.41	0.71	68.80%	69.50%
Red Rockfish	5.9	5.9	5.9	0.0	5.9	17.88	0.94	0.22	4.47	0.24	68.80%	67.60%
Unknown Rockfish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sculpin	11.8	11.8	11.8	0.0	5.9	9.50	0.50	0.11	19.00	1.00	60.70%	59.60%
Irish Lord	5.9	5.9	5.9	0.0	0.0	1.12	0.06	0.01	2.24	0.12	68.80%	69.50%
Unknown Sculpin	5.9	5.9	5.9	0.0	5.9	8.38	0.44	0.10	16.76	0.88	68.80%	67.60%
Eel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Skates	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Grayling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Trout and Char	82.4	52.9	52.9	58.8	29.4	395.87	20.84	4.79	282.76	14.88	24.90%	24.40%
Char (general)	76.5	52.9	52.9	47.1	29.4	327.02	17.21	3.95	233.59	12.29	24.20%	23.30%
Dolly Varden	76.5	52.9	52.9	47.1	29.4	327.02	17.21	3.95	233.59	12.29	24.20%	23.30%
Trout	52.9	23.5	23.5	47.1	17.6	68.85	3.62	0.83	49.18	2.59	41.30%	42.00%
Rainbow Trout	17.6	5.9	5.9	17.6	0.0	4.69	0.25	0.06	3.35	0.18	68.80%	69.50%
Steelhead	35.3	17.6	17.6	29.4	17.6	64.15	3.38	0.78	45.82	2.41	44.50%	45.20%

Table 31. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Karluk, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean	Harvest	Percapita
Game	94.1	64.7	58.8	70.6	41.2	2,524.54	132.87	30.52			47.70%	46.50%
Big Game	94.1	58.8	52.9	70.6	41.2	2,497.72	131.46	30.20			47.90%	46.60%
Brown Bear	5.9	0.0	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Caribou	5.9	5.9	5.9	0.0	5.9	335.29	17.65	4.05	2.24	0.12	68.80%	67.60%
Deer	94.1	58.8	52.9	70.6	41.2	1,883.01	99.11	22.77	43.59	2.29	41.30%	40.00%
Deer, Male	82.4	47.1	47.1	58.8	35.3	1,110.49	58.45	13.43	25.71	1.35	35.40%	34.30%
Deer, Female	52.9	35.3	23.5	47.1	17.6	772.52	40.66	9.34	17.88	0.94	51.50%	50.10%
Deer, Sex Unknown	5.9	5.9	0.0	5.9	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Elk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Goat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Moose	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Reindeer	23.5	5.9	5.9	17.6	5.9	279.41	14.71	3.38	4.47	0.24	68.80%	67.60%
Wild Cow	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	17.6	17.6	17.6	0.0	0.0	26.82	1.41	0.32	13.41	0.71	40.70%	39.80%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Hare	17.6	17.6	17.6	0.0	0.0	26.82	1.41	0.32	13.41	0.71	40.70%	39.80%
Snowshoe Hare	17.6	17.6	17.6	0.0	0.0	26.82	1.41	0.32	13.41	0.71	40.70%	39.80%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Mammals	58.8	11.8	11.8	52.9	11.8	438.12	23.06	5.30			59.20%	57.70%
Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Bowhead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seal	58.8	11.8	11.8	52.9	11.8	438.12	23.06	5.30	7.82	0.41	59.20%	57.70%
Harbor Seal	58.8	11.8	11.8	52.9	11.8	438.12	23.06	5.30	7.82	0.41	59.20%	57.70%
Stellar Sea Lion	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Birds and Eggs	76.5	41.2	41.2	58.8	17.6	244.81	12.88	2.96			38.40%	37.40%
Birds	76.5	41.2	41.2	52.9	17.6	194.52	10.24	2.35			32.00%	31.20%
Upland Game Birds	17.6	17.6	17.6	0.0	0.0	28.95	1.52	0.35	41.35	2.18	55.80%	56.60%
Ptarmigan	17.6	17.6	17.6	0.0	0.0	28.95	1.52	0.35	41.35	2.18	55.80%	56.60%

Table 31. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Karluk, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Migratory Birds	76.5	41.2	41.2	52.9	17.6	165.57	8.71	2.00			36.90%	35.90%
Waterfowl	76.5	41.2	41.2	52.9	17.6	164.45	8.66	1.99			36.80%	35.70%
Ducks	76.5	41.2	41.2	52.9	17.6	164.45	8.66	1.99	245.88	12.94	40.10%	35.70%
Eider	5.9	5.9	5.9	0.0	0.0	5.36	0.28	0.06	3.35	0.18	68.80%	69.50%
Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Harlequin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Goldeneye	58.8	41.2	41.2	35.3	11.8	53.65	2.82	0.65	67.06	3.53	35.80%	34.20%
Bufflehead	35.3	23.5	23.5	23.5	11.8	31.74	1.67	0.38	79.35	4.18	44.30%	42.90%
Merganser	5.9	5.9	5.9	0.0	5.9	1.34	0.07	0.02	2.24	0.12	68.80%	67.60%
Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mallard	64.7	41.2	41.2	35.3	17.6	53.65	2.82	0.65	53.65	2.82	37.00%	36.00%
Pintail	11.8	5.9	5.9	11.8	5.9	5.36	0.28	0.06	6.71	0.35	68.80%	69.50%
Wigeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Teal	5.9	5.9	5.9	5.9	5.9	8.05	0.42	0.10	26.82	1.41	68.80%	67.60%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	11.8	5.9	5.9	5.9	0.0	5.30	0.28	0.06	6.71	0.35	68.80%	70.50%
Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%	0.00%
Emperor Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
White-fronted Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Canada Geese (general)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Canada Geese, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shorebirds	5.9	5.9	5.9	0.0	0.0	1.12	0.06	0.01	11.18	0.59	68.80%	67.60%
Common Snipe	5.9	5.9	5.9	0.0	0.0	1.12	0.06	0.01	11.18	0.59	68.80%	67.60%
Eggs	11.8	5.9	5.9	11.8	5.9	50.29	2.65	0.61	167.65	8.82	68.80%	67.60%
Seabird Eggs	11.8	5.9	5.9	11.8	5.9	50.29	2.65	0.61	167.65	8.82	68.80%	67.60%
Gull Eggs	11.8	5.9	5.9	11.8	5.9	50.29	2.65	0.61	167.65	8.82	68.80%	67.60%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shorebird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Waterfowl Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table 31. Estimated Harvests of Fish, Mammal, Bird, and Wild Plant Resources, Karluk, April 1990 - March 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf. Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Marine Invertebrates	82.4	82.4	82.4	52.9	58.8	1,063.02	55.95	12.85			55.40%	54.40%
Clams	64.7	35.3	35.3	52.9	41.2	737.65	38.82	8.92	245.88 gal	12.94	57.30%	56.30%
Butter Clams	64.7	35.3	35.3	52.9	41.2	620.29	32.65	7.50	206.76 gal	10.88	55.20%	54.30%
Razor Clams	5.9	5.9	5.9	0.0	5.9	83.82	4.41	1.01	27.94 gal	1.47	68.80%	67.60%
Pacific Littleneck Clams (Steamers)	23.5	5.9	5.9	23.5	11.8	33.53	1.76	0.41	11.18 gal	0.59	68.80%	67.60%
Unknown Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Cockles	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Geoducks	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mussels	47.1	47.1	47.1	17.6	29.4	37.72	1.99	0.46	25.15 gal	1.32	24.10%	24.50%
Crabs	17.6	5.9	5.9	17.6	17.6	23.47	1.24	0.28	33.53	1.76	68.80%	67.60%
Dungeness Crab	17.6	5.9	5.9	17.6	17.6	23.47	1.24	0.28	33.53	1.76	68.80%	67.60%
King Crab	5.9	0.0	0.0	5.9	5.9	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Chitons (bidarkis)	58.8	52.9	52.9	29.4	35.3	112.88	5.94	1.36	28.22 gal	1.49	40.40%	39.10%
Chitons (small)	58.8	52.9	52.9	29.4	35.3	112.88	5.94	1.36	28.22 gal	1.49	40.40%	39.10%
Octopus	35.3	5.9	5.9	35.3	11.8	134.12	7.06	1.62	33.53	1.76	68.80%	67.60%
Sea Cucumber	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Sea Urchin	35.3	35.3	35.3	11.8	23.5	17.18	0.90	0.21	34.37 gal	1.81	55.50%	54.30%
Shrimp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Snails	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Plants and Berries	88.2	76.5	76.5	41.2	47.1	499.63	26.30	6.04			25.80%	25.80%
Berries	88.2	76.5	76.5	41.2	47.1	493.46	25.97	5.97	123.37 gal	6.49	25.90%	25.90%
Plants/Greens/Mushrooms	17.6	17.6	17.6	0.0	0.0	6.17	0.32	0.07	1.54 gal	0.08	50.50%	51.10%
Seaweed/Kelp (Food)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seaweed/Kelp (Non-food)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Wood	94.1	88.2	88.2	47.1	52.9	0.00	0.00	0.00	93.04 crd	4.90	17.30%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Figure 49. Subsistence Harvests by Resource Category, Pounds Usable Weight per Capita, Karluk

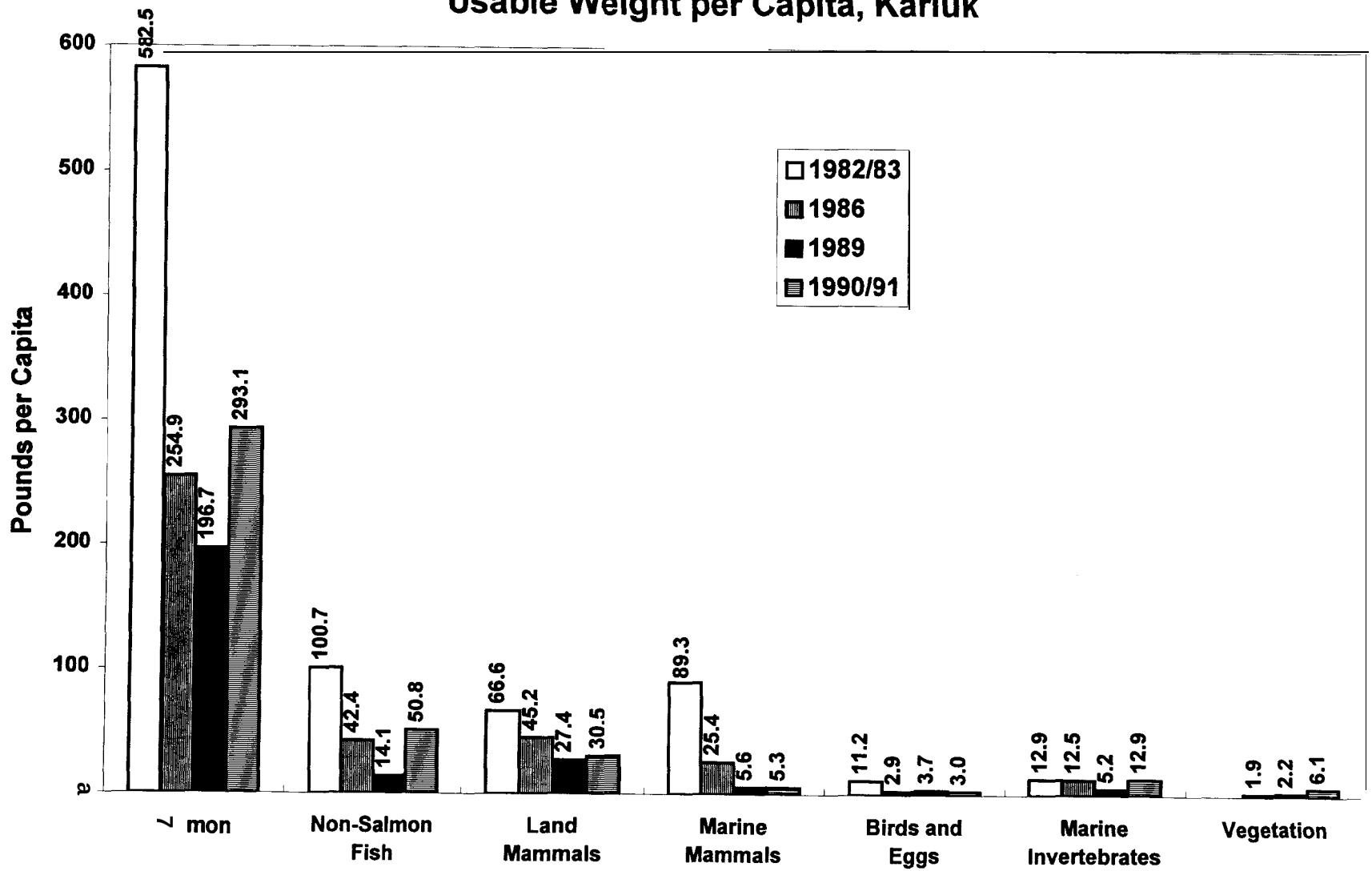
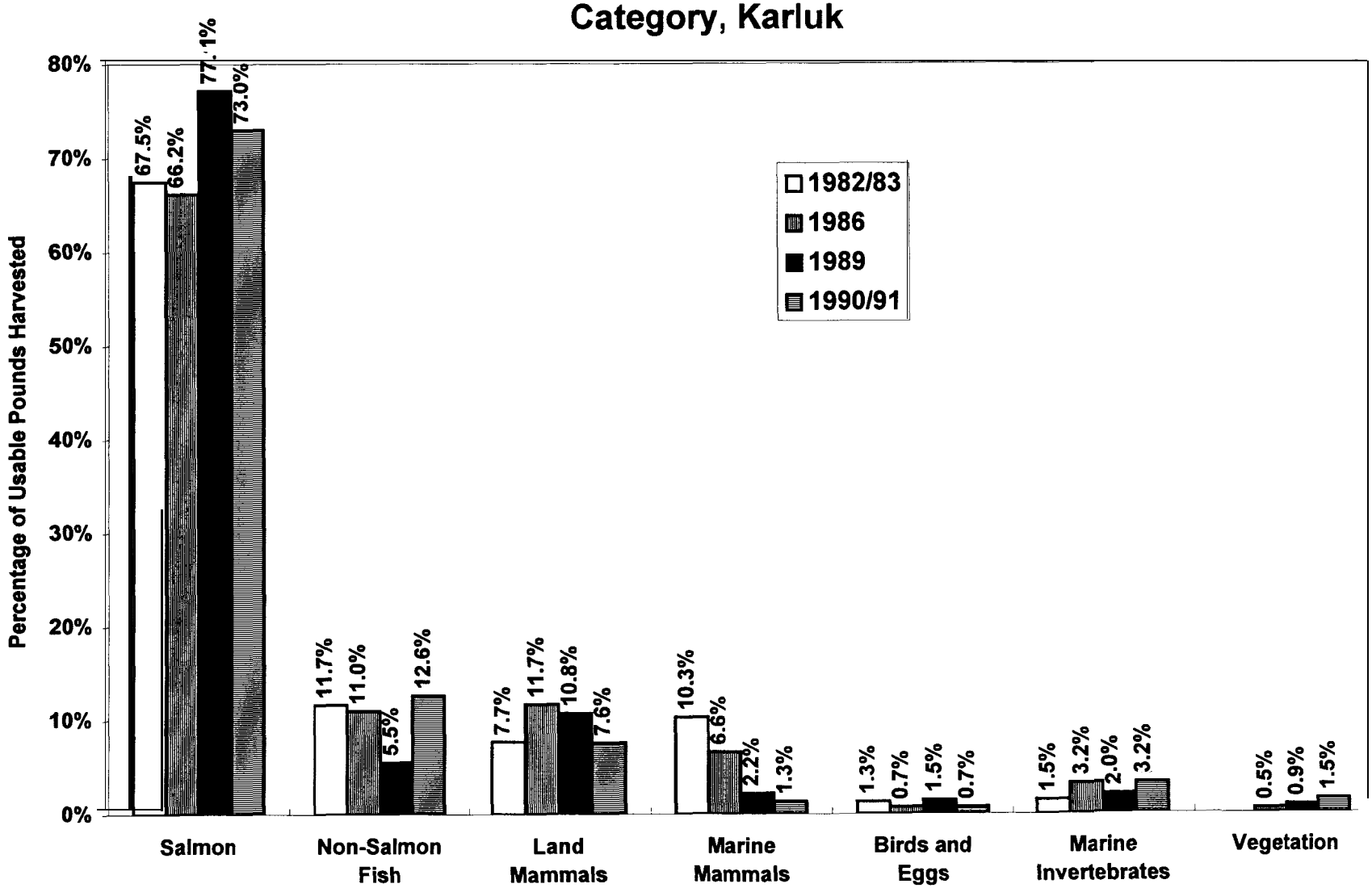


Figure 50. Percentage of Total Subsistence Harvest by Resource Category, Karluk



and 1986. Harvests of birds and eggs showed little change in 1990/91 (3.0 pounds per person) compared to 1989 (3.7 pounds) or 1986 (2.9 pounds) levels, but were well below those of 1982/83 (11.2 pounds per person) (Fig. 48).

Finally, harvests of land mammals and marine mammals at Karluk in 1990/91 showed little change over 1989 and continued what appears to be a trend of declining harvests of these resources in the village. Although harvests of land mammals increased slightly to 30.5 pounds per person (7.6 percent) in 1990/91 over the 27.4 pounds (10.8 percent) in 1989, harvests were lower than the 45.2 pounds recorded for 1986 and the 66.6 pounds for 1982/83. The decline in marine mammal harvests at Karluk has been more sharp. There was virtually no difference between harvest levels in 1990/91 (5.3 pounds per person) and 1989 (5.6 pounds). In contrast, marine mammal harvests at Karluk averaged 25.4 pounds in 1986 and 89.3 pounds in 1982/83 (Fig. 48).

The average range of resources used by Karluk households was 13.2 kinds in 1990/91 (adjusted value). This was an increase over the 10.9 kinds per household recorded for 1989 (Fig. 50). On average, Karluk households harvested 9.1 kinds of wild foods in 1990/91, compared to 8.3 kinds the year before. The average number of resources used and harvested by Karluk households in 1990/91 was notably lower than those of 1982/83, but about the same as 1986.

Levels of Participation

As in previous study years, in 1990/91 virtually every household in Karluk used (100 percent), harvested (94.1 percent), received (100 percent), and gave away (88.2 percent) wild foods (Table 31). As shown in Figure 51, most households used resources of each of the seven categories as well. In the year after the spill (1989), the percentage of Karluk's households using three categories of wild foods declined. These were fish other than salmon (71 percent using in 1989 compared to 84 percent in 1986), marine mammals (down to 57 percent using in 1989 compared to 84 percent in 1986), and birds and eggs (79 percent using in 1989 compared to 90 percent in 1986). In 1990/91, the percentage of households using fish other than salmon rebounded to 94.1 percent, but marine mammals (58.8 percent) and birds and eggs (76.5 percent) showed virtually no change compared to the previous year and remained below pre-spill levels.

Overall, 74.3 percent of Karluk's people engaged in subsistence activities in 1990/91, compared to 72.1 percent the year before (Fig. 24). While a lower percentage hunted (24.3 percent, compared to 32.8 the year before), about the same percentage fished (51.4 percent, compared to 50.8 percent) or gathered (68.9 percent, compared to 67.2 percent).

Figure 51. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Karluk

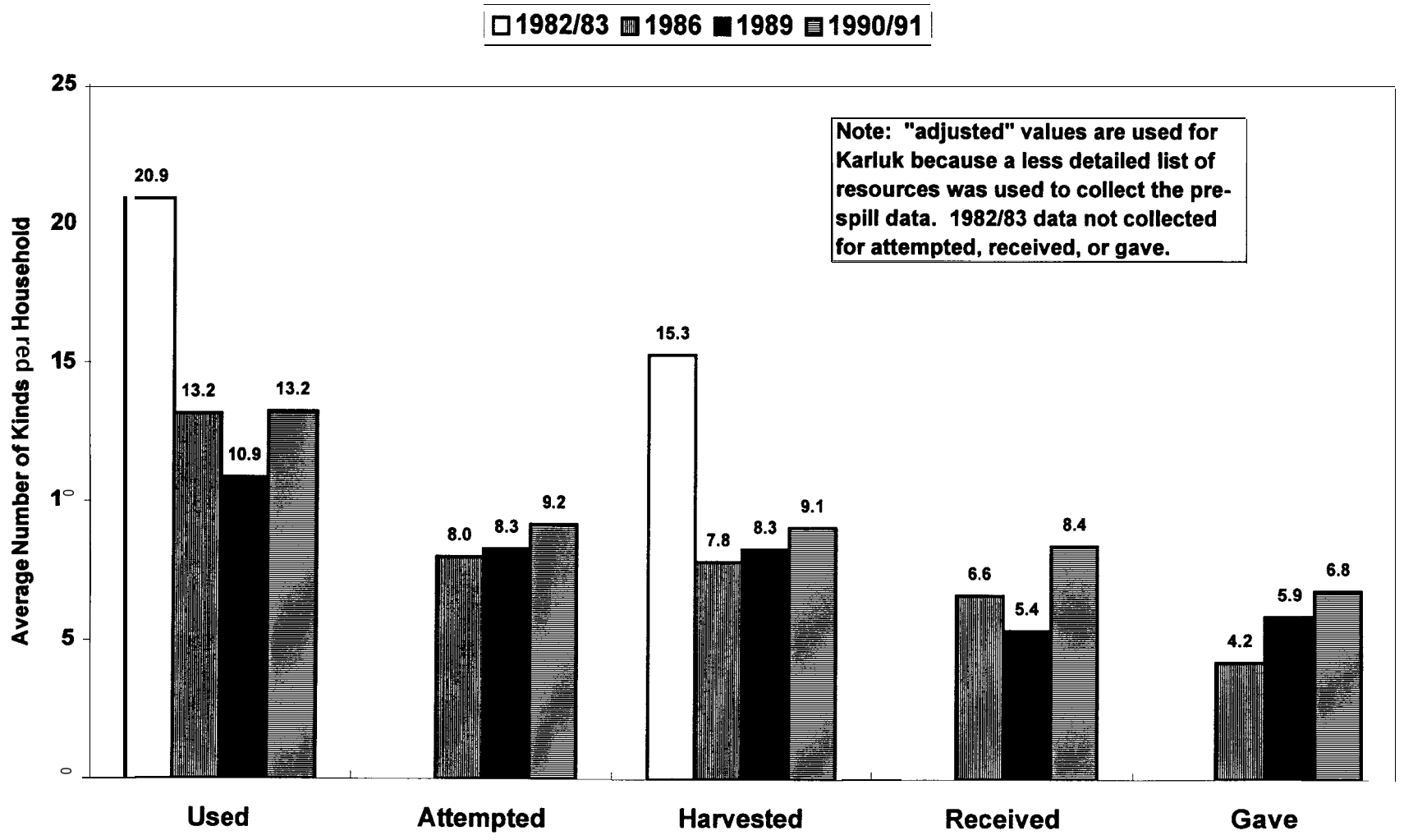
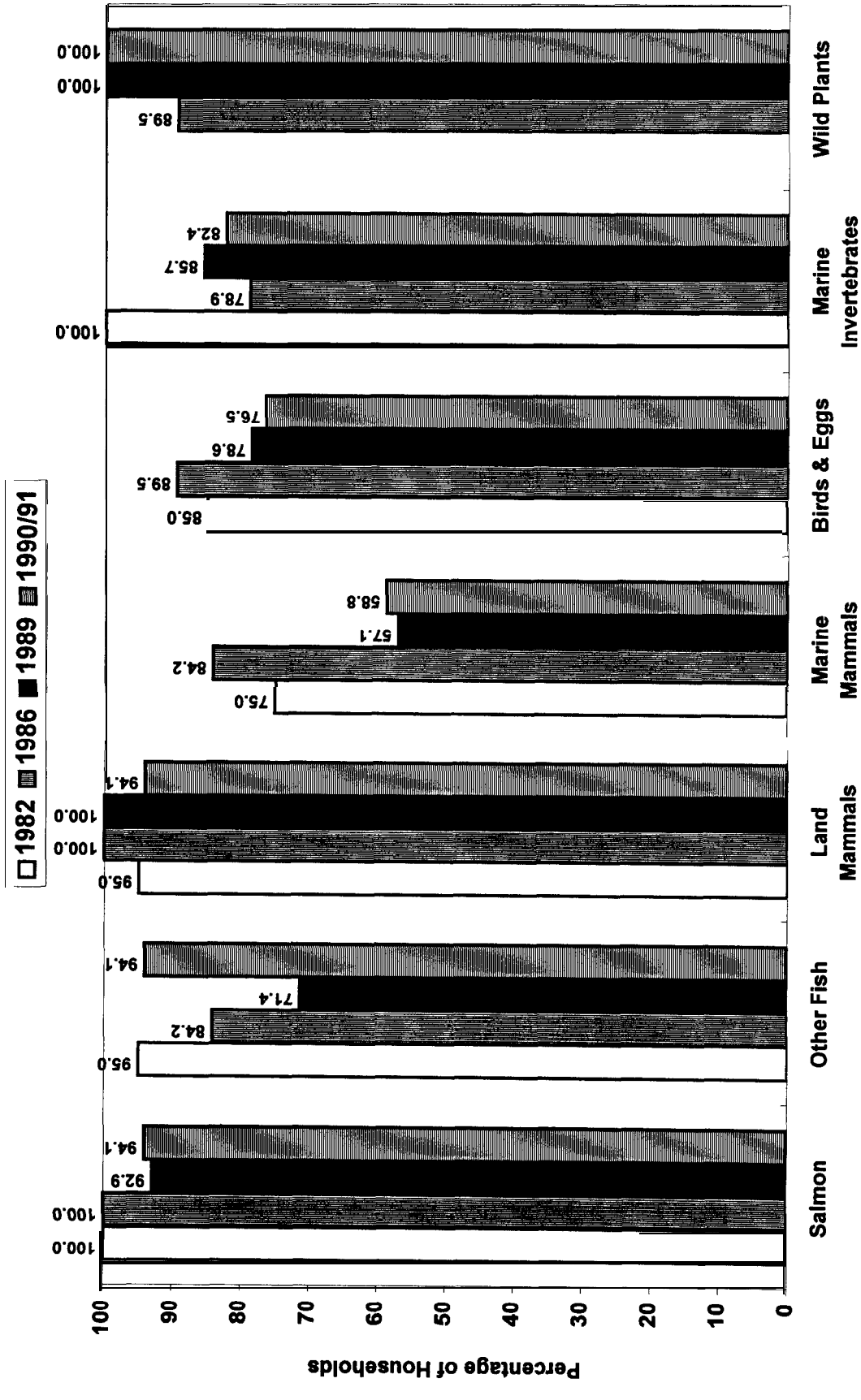


Figure 52. Percentage of Households Using Wild Resources by Category, Karluk



Assessments of Change

As in the other two Kodiak communities included in this round of interviews, the overall assessment of Karluk households appeared to be that salmon harvests and shellfish harvests were up compared to the year before. (See Appendix J.) For example, one household reported higher salmon harvests because they believed the fish "are safer to eat again." They said they "have more confidence [in the safety of shellfish] since the spill is over."

In contrast, many households in Karluk said that they used less deer in 1990/91 than in previous years because "there were fewer around." No household offered an explanation for this scarcity. Of those households which hunt marine mammals, there appeared to be a general consensus that these resource populations were down and harder to find and harvest.

Assessments of harvests of fish other than salmon at Karluk were mixed. For example, one household said that their uses were up because they had received more "because they're catching more." Another respondent said that his household had used more fish "because the spill has dissipated." But another household said that they had used less non-salmon fish than in 1989. There were less flounders, less halibut, and it took more time to achieve harvest goals. A fourth respondent agreed, saying

> We got less in the past year. There is not as many flounders in the winter as there used to be. There's less trout and steelhead. There seems to be less caught in the beach seine.

And another Karluk household stated that they had used less fish because there were fewer around. This household speculated that this scarcity might be due to the oil spill.

CHAPTER FOUR: SUMMARY AND CONCLUSIONS

In the first year following the *Exxon Valdez* oil spill, subsistence harvests and uses in ten Alaska Native villages of Prince William Sound, Lower Cook Inlet, and the Kodiak Island Borough declined markedly compared to pre-spill estimates (Fall 1991). The reasons for the decline varied among communities, households, and resources, but most had to do with concerns about the consequences of the spill, especially the effects the spilled oil might have had on the edibility of subsistence foods. (See Walker and Field 1991, Fall 1991, ADF&G 1990a, and Fall and Field 1996 for summaries of programs designed to test the safety of subsistence foods harvested in the oil spill area.)

In the second year after the spill, the overall picture of subsistence uses in these villages was less clear. Harvests were up for the five communities of Lower Cook Inlet and the Kodiak Island Borough which were part of the restudy, but subsistence uses remained below pre-spill averages everywhere except Port Graham and Larsen Bay. For the most part, the range of resources harvested and used increased over 1989 levels, but remained below pre-spill norms. Households' own assessments of subsistence uses in 1990/91 were generally consistent with these findings. Most households in the Lower Cook Inlet (53.0 percent) and Kodiak Island Borough (52.0 percent) communities said that their uses were up over the year before (Fig. 20), but almost all the households in Nanwalek and Port Graham (85.2 percent) and half of those in the Kodiak Island Borough (50.0 percent) said that their uses had remained below their pre-spill norms (Fig. 21)

A different finding pertained to the Prince William Sound villages of Chenega Bay and Tatitlek. In these communities, subsistence uses in the second year after the spill were, overall, as low or lower than in the first post-spill year. Again, households' assessments of their uses matched these findings, with 90.6 percent of the respondents in these two villages saying that uses were even lower in 1990/91 than the previous year, and virtually everyone (96.9 percent) reporting that uses were below pre-spill levels (Fig. 20, Fig. 21). Most Prince William Sound households continued to express concerns about the safety of using subsistence foods, and many noted severe reductions to some resource populations such as marine mammals, octopus, and some birds (Table 22).

While, in the sample overall, some households expressed renewed confidence in wild foods, for others doubts remained. Many remained confused, especially in the Prince William Sound and Lower Cook Inlet villages. The following statement by a Nanwalek household provides a good summary of the ambiguous, uncertain status of subsistence uses in the villages and for many families after the spill:

> In 1989, we had nothing [i.e., no subsistence foods]. In 1990, we were scared and confused. We didn't know if we should eat [subsistence resources] or not [i.e., because of concerns about possible oil contamination]. This year [1991] we're going to go for it. We don't care if we die or not. We live mainly on subsistence anyway.

These findings support observations by Smythe (1990) concerning the continuing effects of the *Exxon Valdez* spill on the Prince William Sound and Lower Cook Inlet villages in the second year after the spill. Smythe noted continued concerns about oil contamination of subsistence foods in 1990, as well as questions raised in the villages about the effects of the use of chemical solvents and bioremediation on fish, game, and birds. Continued observations of oiled beaches supported the firm belief of many people in the Prince William Sound communities, especially, that a great deal of oil remained in the environment after the first year of clean up efforts. Also, residents of these communities continued to observe injured wildlife, such as blind sea lions, dead and sick bald eagles, and chitons with strange white sores which warned them against returning to pre-spill levels of subsistence uses (e.g., Evanoff 1990). Given these observations and concerns, it is not surprising that the household surveys documented lower than average subsistence harvests in these communities once again.

In summary, the findings from the household survey conducted by the Division of Subsistence in seven Alaska Native villages in the area affected by the *Exxon Valdez* oil spill revealed increased levels of subsistence harvests in five communities in Lower Cook Inlet and the Kodiak Island Borough compared to the first year after the spill. For three communities -- Port Graham, Larsen Bay, and Karluk -- harvests in 1990/91 matched at least one pre-spill study year. This may be attributed, at least in part, to some respondents' renewed confidence in subsistence foods, and increased time to harvest given the major reduction in oil spill clean up employment in 1990.

However, harvests in these five communities generally were lower than pre-spill levels, especially for Nanwalek, Ouzinkie, and Karluk. Furthermore, the subsistence harvests of the two Prince William Sound villages closest to the origin of the spill, Chenega Bay and Tatitlek, continued at extremely low levels compared to pre-spill averages. Tatitlek's harvest even decreased compared to the first post-spill year. In all the study communities, but especially in the Prince William Sound and Lower Cook Inlet areas, explanations of low subsistence harvests centered on reduced populations of some resources, and continued concern about the safety of using subsistence foods. In short, the consequences of the *Exxon Valdez* oil spill remained a factor which affected the subsistence uses of many families in these communities through the second post-spill year.

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APPENDIX A: SURVEY INSTRUMENT

The survey instrument administered in Chenega Bay is included in this appendix as an example of the data gathering instruments used in this project. Similar instruments were used in the other six study communities. The only major differences between the forms are the lists of resources, which vary slightly by region depending upon which are available or used for home use, and which harvest areas were evaluated for changing patterns of use. Samples of the specific forms used in the other six villages are available from the Division of Subsistence upon request.

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

H ID: _____ START TIME: _____ INTERVIEWER: _____

COMMUNITY: CHENEGA BAY 82 STOP TIME: _____ DATE: _____

ID # OF PERSON RESPONDING TO SURVEY: _____

HOUSEHOLD INFORMATION. WHO WERE MEMBERS OF THIS HOUSEHOLD FROM APRIL 1990 TO MARCH 1991?

ID#	M/F	RELATION TO HH HEAD	BIRTHDATE MM/DD/YY	RESIDENCE OF PARENT WHEN BORN	MOVED TO COMMUNITY IN YEAR	MOVED TO COMMUNITY FROM COMMUNITY	ETHNICITY	MONTHS RESIDED IN COMMUNITY APRIL 1990 - MARCH 1991	IN HH IN 1989/90? Y/N	EDUCATION LEVEL
1 HEAD								A M J J A S O N D J F M		
2 SPOUSE								A M J J A S O N D J F M		
3								A M J J A S O N D J F M		
4								A M J J A S O N D J F M		
6								A M J J A S O N D J F M		
8								A M J J A S O N D J F M		
9								A M J J A S O N D J F M		

USING PERSON'S ID # FROM THE TABLE ABOVE, INDICATE WHICH HOUSEHOLD MEMBERS PARTICIPATED IN HARVESTING ACTIVITIES IN 1990.

HUNTING: _____ FISHING (INCLUDE CLAMS, ETC.): _____

TRAPPING: _____ PLANT GATHERING: _____

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

TEMPORARY HOUSEHOLD MEMBERS.

DID ANYONE ELSE STAY IN THIS HOUSEHOLD BETWEEN APRIL 1990 AND MARCH 1991?

ID#	M/F	RELATION TO HH HEAD	YEARS OF AGE	PLACE OF PERMANENT RESIDENCE	MONTHS RESIDED IN COMMUNITY BETWEEN APR '90 AND MAR '91	IN HH IN 1989/90? Y/N	PURPOSE OF STAY
21					A M J J A S O N D J F M		
22					A M J J A S O N D J F M		
23					A M J J A S O N D J F M		
					A M J J A S O N D J F M		
					A M J J A S O N D J F M		
26					A M J J A S O N D J F M		
27					A M J J A S O N D J F M		
					A M J J A S O N D J F M		
					A M J J A S O N D J F M		

USING PERSON'S ID # FROM THE TABLE ABOVE, INDICATE WHICH TEMPORARY MEMBERS PARTICIPATED IN HARVESTING ACTIVITIES IN 1990.

HUNTING: _____ FISHING (INCLUDE CLAMS, ETC.): _____

TRAPPING: _____ PLANT GATHERING: _____

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

COMMERCIAL FISHING.

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL FISHING BETWEEN APRIL 1990 AND MARCH 1991? YES:_____ NO:_____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

AREAS: AKP, CR, CHG, KOD, LCI, PWS, SE, UCI

GEAR TYPES: SET GILL, DRIFT GILL, SEINE, LONG LINE, TROLLS, POTS.

SPECIES	COMMERCIAL FISHED? Y/N	INCIDENTAL	AREAS 1ST	2ND	3RD	4TH	GEAR TYPE	HOME USE NUMBER	UNIT	GAVE AWAY NUMBER	UNIT	ID #'S OF FISHERS PERMIT HOLDER	CREW
CHUM SALMON 110101													
COHO SALMON 110201													
CHINOOK SALMON 110301													
PINK SALMON 110401													
SOCKEYE SALMON 110501													
UNKNOWN SALMON 119901													
BLACK COD (SABLEFISH) 121111													
[illegible] COD 121121													
UNKNOWN COD 121191													
HALIBUT 121401													

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

AREAS: AKP, CHG, CR, KOD, LCI, PWS, SE, UCI

GEAR TYPES: SET GILL, DRIFT GILL, SEINE, LONG LINE, TROLLS, POTS.

SPECIES	COMMERCIAL FISHED?		AREAS				GEAR TYPE	HOME USE		GAVE AWAY		ID #'S OF FISHERS	
	Y/N	INCIDENTAL	1ST	2ND	3RD	4TH		NUMBER	UNIT	NUMBER	UNIT	PERMIT HOLDER	CREW
HERRING													
121501													
HERRING ROE ON KELP													
121701													
HERRING SAC ROE													
121801													
BLACK ROCKFISH													
121911													
RED ROCKFISH													
121801													
UNKNOWN ROCKFISH													
121991													
DUNGENESS CRAB													
500311													
KING CRAB													
500321													
TANNER CRAB													
500331													
OCTOPUS													
500901													
SHRIMP													
501201													

NON-COMMERCIAL FISHING: SALMON.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SALMON BETWEEN APRIL 1990 AND MARCH 1991? YES: _____ NO: _____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED BY: SUB. GILLNET #	SUB. SEINE #	ROD & REEL #	OTHER #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N
CHUM SALMON 110102									
COHO SALMON 11202									
CHINOOK SALMON 110302									
PINK SALMON 110402									
SOCKEYE SALMON 110502									

HOW WOULD YOU COMPARE YOUR 1990/91 SUBSISTENCE SALMON USE AND HARVEST WITH A YEAR EARLIER (1989/90)?
WAS IT ABOUT THE SAME OR DIFFERENT? IF DIFFERENT, WHY?

NON-COMMERCIAL FISHING: SALMON - RECEIVED & GAVE.

SPECIES	RECEIVED RESOURCES FROM					GAVE RESOURCES TO				
	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5
CHUM SALMON 110102										
COHO SALMON 110202										
CHINOOK SALMON 110302										
PINK SALMON 110402										
SOCKEYE SALMON 110502										

WERE THERE SALMON YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMAL? YES:_____ NO:_____

HOW WERE THEY DIFFERENT? _____

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT WAY? _____

HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL? YES:_____ NO:_____

WHEN AND WHERE? _____

NON-COMMERCIAL FISHING: NON-SALMON FINFISH.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE FISH OTHER THAN SALMON BETWEEN APRIL 1990 AND MARCH 1991? YES: ____ NO:____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED BY: SUB. GILLNET #	SUB. SEINE #	ROD & REEL #	HANDLINE #	OTHER #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N
BLACK COD (SABLEFISH) 121112										
GRAY COD 121122										
LINGCOD 121132										
FLOUNDER 121202										
HALIBUT 121402										
HERRING 121502										
HERRING ROE 121602										
ROE ON KELP 121702										
BLACK ROCKFISH 121912										
RED ROCKFISH 121922										

NON-COMMERCIAL FISHING: OTHER FINFISH - RECEIVED & GAVE.

SPECIES	RECEIVED RESOURCES FROM					GAVE RESOURCES TO				
	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5
BLACK COD (SABLEFISH)										
121112										
GRAY COD										
121122										
LINGCOD										
121132										
FLOUNDER										
121202										
HALIBUT										
121402										
HERRING										
121502										
HERRING ROE										
121602										
ROE ON KELP										
121702										
BLACK ROCKFISH										
121912										
RED ROCKFISH										
121922										

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

NON-COMMERCIAL FISHING: NON-SALMON FINFISH.

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED BY: SUB. GILLNET #	SUB. SEINE #	ROD & REEL #	HANDLINE #	OTHER #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N
EULACHON (HOOLIGAN) 122112										
UNKNOWN SMELT 122192										
DOLLY VARDEN 124122										
LAKE TROUT 124222										

NON-COMMERCIAL FISHING: NON-SALMON FINFISH - RECEIVED & GAVE.

SPECIES	E IV RES S FROM A RESOURC O M 2 COM COMM. M 2 COMM. 3 O
EULACHON (HOOLIGAN) 122112	
UNKNOWN SMEL 122192	
DOLLY VARDEN 124122	
LAKE TROUT 124222	

NON-COMMERCIAL FISHING: NON-SALMON FINFISH.

HOW WOULD YOU COMPARE YOUR 1990/91 SUBSISTENCE FISH OTHER THAN SALMON USE AND HARVEST WITH A YEAR EARLIER (1989/90)? WAS IT ABOUT THE SAME OR DIFFERENT? IF DIFFERENT, WHY?

WERE THERE FISH OTHER THAN SALMON YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMAL?

YES:_____ NO _____

HOW WERE THEY DIFFERENT?

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT WAY?

HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL? YES:_____ NO:_____

WHEN AND WHERE?

NOTES:

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

NON-COMMERCIAL FISHING: SHELLFISH.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SHELLFISH BETWEEN APRIL 1990 AND MARCH 1991? YES:_____ NO:_____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED #	HARVESTED UNIT	RECEIVED Y/N	GAVE AWAY Y/N	RECEIVED RESOURCES FROM COMM. 1	RECEIVED RESOURCES FROM COMM. 2	RECEIVED RESOURCES FROM COMM. 3	RECEIVED RESOURCES FROM COMM. 4	RECEIVED RESOURCES FROM COMM. 5	GAVE RESOURCES TO COMM. 1	GAVE RESOURCES TO COMM. 2	GAVE RESOURCES TO COMM. 3	GAVE RESOURCES TO COMM. 4	GAVE RESOURCES TO COMM. 5
TER CLAMS																
500212																
RAZOR CLAMS																
500222																
UNKNOWN CLAMS																
500292																
DUNGENESS CRAB																
500312																
KING CRAB																
500322																
TANNER CRAB																
500332																
COCKLES																
500402																
MUSSELS																
500702																
SMALL BIDARKIS																
500822																
OCTOPUS																
500902																
SEA URCHIN																
501102																
SHRIMP																
501202																

NON-COMMERCIAL FISHING: SHELLFISH.

HOW WOULD YOU COMPARE YOUR 1990/91 SUBSISTENCE SHELLFISH USE AND HARVEST WITH A YEAR EARLIER (1989/90)?
WAS IT ABOUT THE SAME OR DIFFERENT? IF DIFFERENT, WHY?

WERE THERE SHELLFISH YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMAL? YES:_____ NO:____
HOW WERE THEY DIFFERENT?

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT WAY?

HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL? YES:_____ NO:_____
WHEN AND WHERE?

LAND MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE GAME BETWEEN APRIL 1990 AND MARCH 1991? YES: _____ NO: _____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED FOR FOOD #	FOR FOOD UNIT	FOR FUR ONLY #	FOR FUR ONLY UNIT	RECEIVED Y/N	GAVE AWAY Y/N	NOTES:
BLACK BEAR 210200									
DEER 210500									
GOAT 210700									
MOOSE 210800									

LAND MAMMALS - RECEIVED & GAVE.

SPECIES	RECEIVED RESOURCES FROM					GAVE RESOURCES TO				
	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5
BLACK BEAR 210200										
DEER 210500										
GOAT 210700										
MOOSE 210800										

LAND MAMMALS.

HOW WOULD YOU COMPARE YOUR 1990/91 SUBSISTENCE GAME USE AND HARVEST WITH A YEAR EARLIER (1989/90)?
WAS IT ABOUT THE SAME OR DIFFERENT? IF DIFFERENT, WHY?

WERE THERE GAME YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMAL? YES:_____ NO:____
HOW WERE THEY DIFFERENT?

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT WAY?

HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL?
WHEN AND WHERE?

MARINE MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE MAMMALS BETWEEN APRIL 1990 AND MARCH 1991 YES: _____ NO: _____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED FOR FOOD #	FOR FOOD UNIT	NUMBER HARVESTED FOR FUR ONLY #	FOR FUR ONLY UNIT	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
HARBOR SEAL 300230									
PORPOISE/DOLPHIN 300500									
SEA LION 300600									
SEA OTTE 300700									

Notes:

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

MARINE MAMMALS - RECEIVED & GAVE.

SPECIES	RECEIVED RESOURCES FROM					GAVE RESOURCES TO				
	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5
~~HARBOR SEAL~~ 300230										
PORPOISE/DOLPHIN 300500										
SEA LION 300600										
SEA OTTER 300700										

NOTES:

MARINE MAMMALS.

HOW WOULD YOU COMPARE YOUR 1990/91 SUBSISTENCE MARINE MAMMAL USE AND HARVEST WITH A YEAR EARLIER (1989/90)?
WAS IT ABOUT THE SAME OR DIFFERENT? IF DIFFERENT, WHY?

WERE THERE MARINE MAMMALS YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMAL? YES:_____ NO:____
HOW WERE THEY DIFFERENT?

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT WAY?

HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL? YES:_____ NO:_____
WHEN AND WHERE?

NOTES:

FURBEARERS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE FURBEARERS BETWEEN APRIL 1990 AND MARCH 1991? YES: ____ NO ____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED FOR FOOD #	UNIT	FUR ONLY #	RECEIVED Y/N	GAVE AWAY Y/N	NUMBER SOLD	AVERAGE PRICE	NOTES
LAND OTTER 220500										
MARTEN 220800										
MINK 220900										
PORCUPINE 221100										

FURBEARERS.

HOW WOULD YOU COMPARE YOUR 1990/91 SUBSISTENCE FURBEARER USE AND HARVEST WITH A YEAR EARLIER (1989/90)?
WAS IT ABOUT THE SAME OR DIFFERENT? IF DIFFERENT, WHY?

WERE THERE FURBEARERS YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMA YES:_____ NO ____.
HOW WERE THEY DIFFERENT?

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT WAY?

HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL? YES:_____ NO:_____
WHEN AND WHERE?

BIRDS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE BIRDS BETWEEN APRIL 1990 AND MARCH 1991? YES:_____ NO:_____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED #	HARVESTED UNIT		RECEIVED Y/N	GAVE AWAY Y/N	NOTES
GROUSE								
420100								
PTARMIGAN								
420200								
SCOTER								
441020								
GOLDENEYE								
441040								
BUFFLEHEAD								
441050								
MERGANSER								
441060								
MALLARD								
441080								
PINTAIL								
441090								
TEAL								
441110								
DUCKS, UNKNOWN								
441990								
CANADA GEESE, DUSKY								
442090								
SANDHILL CRANE								
444010								
CORMORANTS								
446010								

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

BIRDS - RECEIVED & GAVE AWAY.

SPECIES	RECEIVED RESOURCES FROM					GAVE RESOURCES TO				
	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5
GROUSE 420100										
PTARMIGAN 420200										
SCOTER 441020										
GOLDENEYE 441040										
BUFFLEHEAD - 441050										
MERGANSER - 441060										
MALLARD 441080										
PINTAIL [illegible]										
TEAL 441110										
UNKNOWN DUCKS 441990										
CANADA GEESE, DU[illegible] 442090										
SANDHILL CRANE 444010										
CORMORANTS 446010										

BIRDS.

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED #	UNIT	MONTHS OF HARVEST	RECEIVED Y/N	GAVE AWAY Y/N
GULL EGGS 454030							
TERN EGGS 451050							
DUCK EGGS 454010							
GEESE EGGS 454020							

BIRDS - RECEIVED & GAVE AWAY.

SPECIES	RECEIVED RESOURCES FROM					GAVE RESOURCES TO				
	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5	COMM. 1	COMM. 2	COMM. 3	COMM. 4	COMM. 5
GULL EGGS										
451020										
TERN EGGS										
451050										
DUCK EGGS										
454010										
GEESE EGGS										
454020										

BIRDS.

HOW WOULD U COMPARE YOUR 1990/9 UBSISTENCE BIRD USE AND HARVEST WITH A YEAR EARLIER (1989/90)?
WAS IT ABOU HE SAME OR DIFFERENT? DIFFERENT, WHY?

NO:

WERE THERE BIRDS YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMAL?
HOW WERE THEY DIFFERENT?

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT

NO

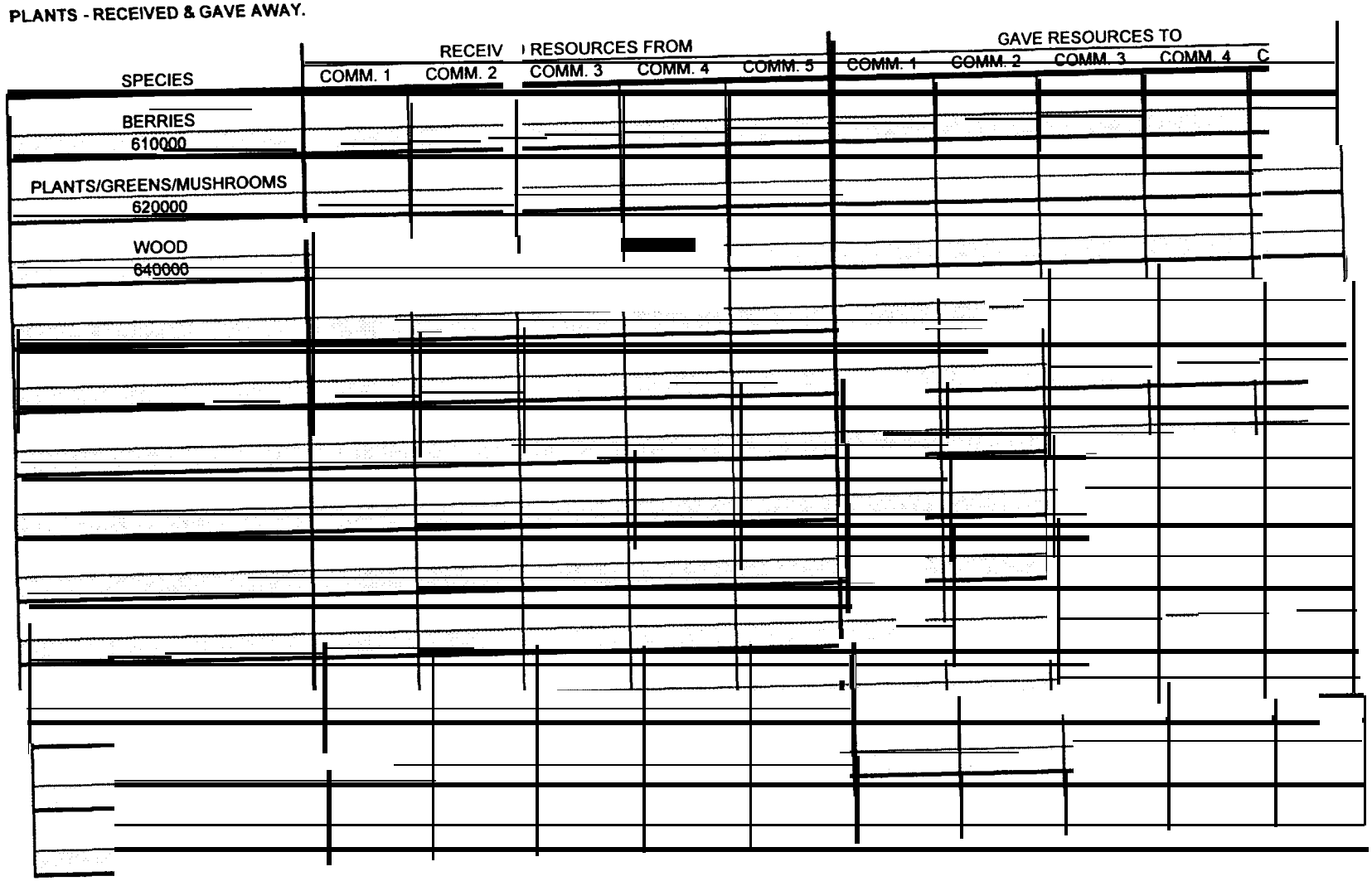
HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL?
WHEN AND WHERE?

WILD PLANTS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE WI PLANTS (IN IDING FIREV ETWE APRIL 1990 AND MARCH 1991? YES:_____ NO:_____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHO D INDICATE BLE WEIGH

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	AMOUNT HARVESTED #	UNIT	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
BERRIES							
610000							
PLANTS/GREENS/MUSHROOMS							
620000							
WOOD							
640000							

PLANTS - RECEIVED & GAVE AWAY.



PLANTS 2 (10B)

CHENEGA BAY (82) HH:____

PLANTS.

HOW WOULD YOU COMPARE YOUR 1990/91 SUBSISTENCE PLANT USE AND HARVEST WITH A YEAR EARLIER (1989/90)?
WAS IT ABOUT THE SAME OR DIFFERENT? IF DIFFERENT, WHY?

WERE THERE PLANTS YOU HARVESTED OR WERE GIVEN THAT YOU THREW AWAY BECAUSE THEY DID NOT APPEAR NORMAL? YES:_____ NO:____
HOW WERE THEY DIFFERENT?

DO YOU HAVE ANY IDEA WHY IT/THEY LOOKED THAT WAY?

HAVE YOU SEEN OR HEARD ABOUT SUCH THINGS BEFORE THE OIL SPILL? YES:_____ NO:_____
WHEN AND WHERE?

PRINCE WILLIAM SOUND RESOURCE SURVEY 1990

HARVEST AREAS.

AREA: SAWMILL BAY

HAVE YOU HARVESTED RESOURCES IN THIS AREA?

WHAT DO YOU USE THIS AREA FOR?

PRIOR TO MARCH 1989 (PRESPILL): Y N

PRESPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME

MARINE MAMMALS INVERTEBRATES BIRDS PLANTS

OTHER:

PRESPILL:

AFTER MARCH 1989 (POSTSPILL): Y N

POSTSPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME

MARINE MAMMALS INVERTEBRATES BIRDS PLANTS

OTHER:

POSTSPILL:

HOW FREQUENTLY USED?

HAS YOUR U EA TURNED TO PRE-MARCH 1989 (PRESPILL) LEVELS? Y N

IF NOT, WHY

AREA: EVANS ISLAND

HAVE YOU HARVESTED RESOURCES IN THIS AREA?

WHAT DO YOU USE THIS AREA FOR?

PRIOR TO MARCH 1989 (PRESPILL): Y N

PRESPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME

MARINE MAMMALS INVERTEBRATES BIRDS PLANTS

OTHER:

PRESPILL:

AFTER MARCH 1989 (POSTSPILL): Y N

POSTSPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME

MARINE MAMMALS INVERTEBRATES BIRDS PLANTS

OTHER:

POSTSPILL:

HOW FREQUENTLY USED?

HAS YOUR USE OF THE AREA RETURNED TO PRE-MARCH 1989 (PRESPILL) LEVELS? Y N

IF NOT, WHY?

HARVEST AREAS.

AREA: ELRINGTON PASSAGE

HAVE YOU HARVESTED RESOURCES IN THIS EA

WHAT DO YOU USE THIS AREA FOR?

PRIOR TO MARCH 1989 (PRESPILL): Y N

PRESPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME
MARINE MAMMALS INVERTEBRATES BIRDS PLANTS
OTHER:

AFTER MARCH 1989 (POSTSPILL): Y N

POSTSPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME
MARINE MAMMALS INVERTEBRATES BIRDS PLANTS
OTHER:

HOW FREQUENTLY USED?

PRESPILL:

POSTSPILL:

HAS YOUR USE OF THE AREA RETURNED TO PRE-MARCH 1989 (PRESPILL) LEVELS? Y N

IF NOT, WHY?

EA WH

AREA:

HAVE YOU HARVESTED RESOURCES IN THIS AREA?

WHAT DO YOU USE THIS AREA FOR?

PRIOR TO MARCH 1989 (PRESPILL): Y N

PRESPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME
MARINE MAMMALS INVERTEBRATES BIRDS PLANTS
OTHER:

AFTER MARCH 1989 (POSTSPILL): Y N

POSTSPILL:

SALMON OTHER FINFISH BIG GAME SMALL GAME
MARINE MAMMALS INVERTEBRATES BIRDS PLANTS
OTHER:

HOW FREQUENTLY USED?

PRESPILL:

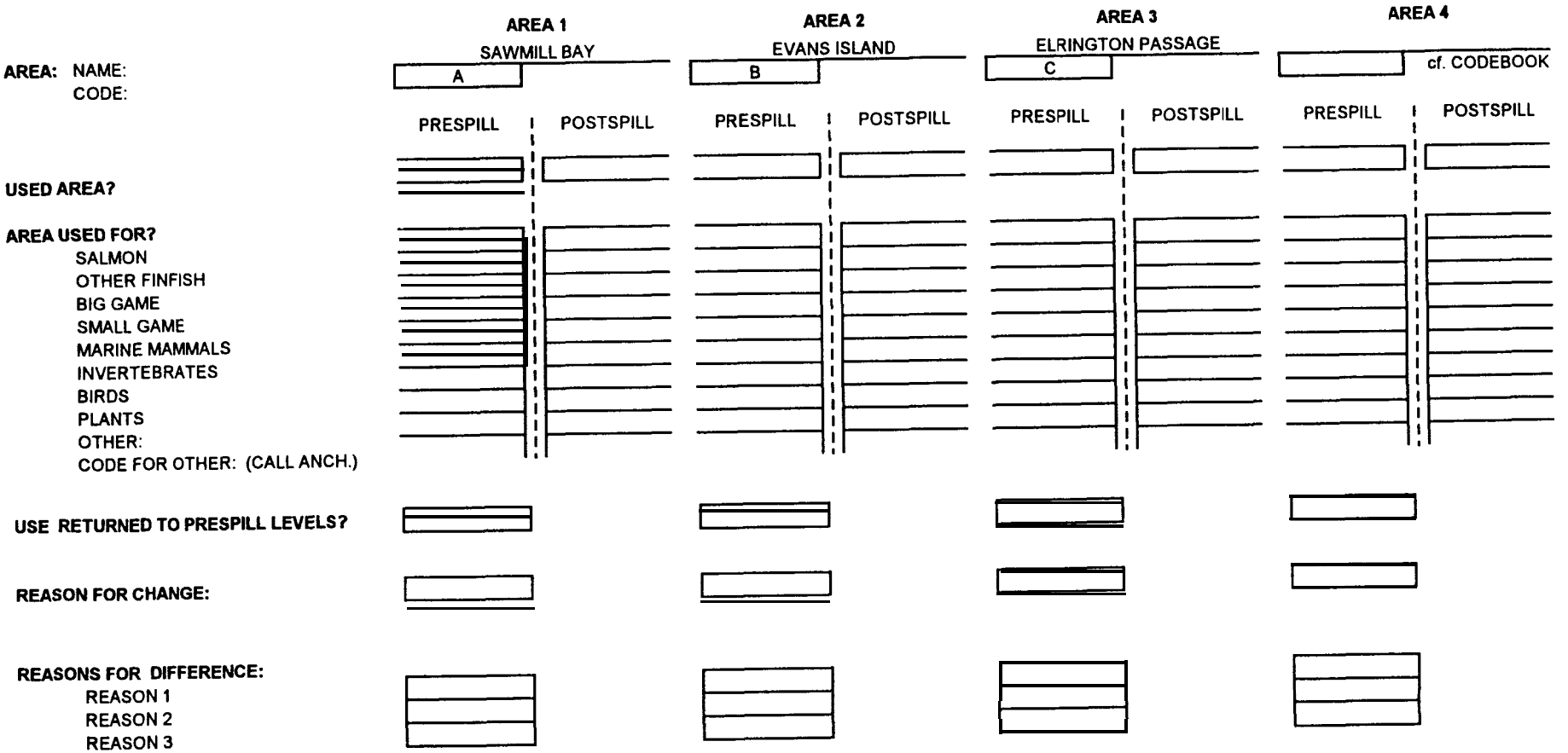
POSTSPILL:

HAS YOUR USE OF THE AREA RETURNED TO PRE-MARCH 1989 (PRESPILL) LEVELS? Y N

IF NOT, WHY?

HARVEST AREAS: CODING SHEET.

RECORD TYPE: 29



EMPLOYMENT HISTORY.

PLEASE INDICATE THE FOLLOWING INFORMATION FOR ALL JOBS HELD BY THE EMPLOYED PERMANENT HOUSEHOLD MEMBERS 16 OR OLDER LISTED IN QUESTION 1 BETWEEN APRIL 1990 AND MARCH 1991, AND FOR LOCAL JOBS HELD BY TEMPORARY RESIDENTS FROM QUESTION 3.
FOR THOSE NOT EMPLOYED, PLEASE SPECIFY RETIRED, UNEMPLOYED, DISABLED, STUDENT, OR HOMEMAKER.]

TYPE: (1) NATIVE PROFIT, (2) NATIVE NON-PROFIT, OR (3) OIL SPILL; OTHERWISE LEAVE BLANK.

ID#	JOB #	JOB TITLE	SOC	EMPLOYER	SIC	TYPE	LOCATION	WHICH MONTHS WORKED IN YEAR	HRS/DAY	DAYS/WEEK	PERSONAL GROSS INCOME
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			
								A M J J A S O N D J F M			

INCOME AND EXPENSES.

OTHER INCOME SOURCES (CHECK ALL THAT APPLY AND INDICATE ANNUAL AMOUNT).

EXXON CLAIMS	$	AFDC	$	ADULT PUBLIC ASSISTANCE	$
EXXON DAMAGES	$	PENSION/RETIREMENT	$	LONGEVITY BONUS	$
SOCIAL SECURITY	$	WORK COMP/INSURANCE	$	ENERGY ASSISTANCE	$
SUPP. SECURITY INCOME	$	FOOD STAMPS	$	UNEMPLOYMENT	$
CORP. DIVIDEND	$	DIVIDENDS/INTEREST	$	OTHER:	$

PLEASE ESTIMATE YOUR MONTHLY FOOD PURCHASES: $

HOW MANY POUNDS OF FISH, MEAT, AND POULTRY DO YOU PURCHASE ON THE AVERAGE EACH MONTH? POUNDS

MENT

R 1990/91 SUBSISTENCE USES AND HARVESTS WITH OTHER YEARS?

YOU HAVE ANY OTHER QUESTIONS, COMMENTS, OR CONCERNS?

Appendix B. Units of Measure and Conversion Factors, Gulf of Alaska, 1990

Units = unit of measure used to collect the data

Factor = factor used to convert unit of measure into pounds usable weight

Resource Name	Prince William Sound		Lower Cook Inlet		Kodiak Island	
	Units'	Factor	Units	Factor	Units	Factor
Chum Salmon	individuals	6.96	individuals	6.60	individuals	5.69
Coho Salmon	individuals	6.83	individuals	5.30	individuals	6.15
Chinook Salmon	individuals	18.58	individuals	9.90	individuals	8.78
Pink Salmon	individuals	2.19	individuals	2.00	individuals	2.32
Sockeye Salmon	individuals	4.51	individuals	3.00	individuals	3.85
Spawnouts, Salmon			individuals	1.40		
Unknown Salmon	individuals	4.82			individuals	4.39
Grayling					individuals	0.70
Black Cod	individuals	3.10	individuals	3.10		
Gray Cod	individuals	3.20	individuals	3.20	individuals	3.20
Lingcod	individuals	4.00	individuals	4.00	individuals	4.00
Tom Cod			individuals	0.50		
Greenling			individuals	1.00	individuals	1.00
Flounder	individuals	3.00	individuals	3.00	individuals	3.00
Sole			individuals	1.00		
Halibut	individuals	45.00	individuals	21.20	individuals	36.10
Hernng	gallons	6.00	gallons	6.00	gallons	6.00
Herring Roe		0.00	See Comment	0.00		
Roe on Kelp	gallons	7.00	gallons	7.00		
Sack Roe		0.00	See Comment	0.00		
Black Rockfish	individuals	1.50	individuals	1.50	individuals	1.50
Red Rockfish	individuals	4.00	individuals	4.00	individuals	4.00
Unknown Rockfish					individuals	1.97
Irish Lord			individuals	0.50	individuals	0.50
Unknown Sculpin			individuals	0.50	individuals	0.50
Eulachon (Candlefish)	gallons	3.25	gallons	3.25		
Unknown Smelt	See Comment	0.00				
Eel					individuals	0.00
Shark			individuals	9.00		
Skates					individuals	0.00
Dolly Varden	individuals	1.40	individuals	1.40	individuals	1.40
Lake Trout	individuals	1.40				
Rainbow Trout			individuals	1.40	individuals	1.40
Steelhead			individuals	1.40	individuals	1.40
Unknown Trout			individuals	1.40		
Black Bear	individuals	58.00	individuals	58.00		
Brown Bear					See Comment	0.00
Caribou	individuals	150.00			individuals	150.00
Deer	individuals	43.20	individuals	43.20	individuals	43.20
Elk					individuals	225.00
Goat	See Comment	0.00	individuals	72.50	See Comment	0.00
Moose	See Comment	0.00	See Comment	0.00	See Comment	0.00

Appendix B, continued

Resource Name	Prince William Sound		Lower Cook Inlet		Kodiak Island	
	Units'	Factor	Units	Factor	Units	Factor
Reindeer					individuals	62.50
Sheep			iee Comment	0.00		
Wild Cow					ee Comment	0.00
Red Fox			individuals	0.00	individuals	0.00
Beaver			individuals	0.00	individuals	0.00
Coyote			iee Comment	0.00		
Snowshoe Hare			individuals	2.00	individuals	2.00
Land Otter	individuals	0.00	individuals	0.00	individuals	0.00
Lynx			See Comment	0.00		
Marmot				0.00		
Marten	individuals	0.00	individuals	0.00		
Mink	individuals	0.00	individuals	0.00		
Muskrat			See Comment	0.00		
Porcupine	individuals	0.00	individuals	0.00		
Weasel			See Comment	0.00	individuals	0.00
Wolf			See Comment	0.00		
Wolverine			See Comment	0.00		
Tree Squirrel			individuals	0.50		
Harbor Seal	individuals	37.80	individuals	56.00	individuals	56.00
Porpoise/Dolphin	See Comment	0.00				
Sea Lion	individuals	81.86	individuals	200.00	individuals	200.00
Sea Otter	individuals	19.50	individuals	19.50	individuals	19.50
Grouse	individuals	0.70	individuals	0.70		
Ptarmigan	individuals	0.70	individuals	0.70	individuals	0.70
Eider					individuals	1.60
Eider, Large			See Comment	0.00		
Scoter	individuals	0.90			individuals	0.90
Scoter, Whitewing			individuals	0.90		
Scoter, Blackwing			individuals	0.90		
Harlequin			individuals	0.50	individuals	0.50
Goldeneye	individuals	0.80	individuals	0.80	individuals	0.80
Bufflehead	individuals	0.40	individuals	0.40	individuals	0.40
Merganser	individuals	0.60	individuals	0.60	individuals	0.60
Scaup			individuals	0.90	individuals	0.90
Mallard	individuals	1.00	individuals	1.00	individuals	1.00
Pintail	individuals	0.80	individuals	0.80	individuals	0.80
Wigeon			individuals	0.70	individuals	0.70
Teal	individuals	0.30	individuals	0.30	individuals	0.30
Gadwall			individuals	0.80	individuals	0.80
Oldsquaw			individuals	0.80	individuals	0.80
Shoveler			See Comment	0.00		
Ducks, Unknown	individuals	0.84	individuals	0.86	individuals	0.79
Brant			See Comment	0.00		
Emperor Geese					See Comment	0.00
Whitefronted Geese			individuals	2.40	individuals	2.40

Appendix B, continued

Resource Name	Prince William Sound		Lower Cook Inlet		Kodiak Island	
	Units	Factor	Units	Factor	Units	Factor
Canada Geese (general)			See Comment	0.00		
Canada Geese, Dusky	individuals	3.60				
Canada Geese, Unknown					See Comment	0.00
Geese, Unknown	individuals	3.60				
Whistling (Tundra) Swan			See Comment	0.00		
Sandhill Crane	See Comment	0.00	See Comment	0.00		
Snipe			individuals	0.10	individuals	0.10
Loons			individuals	3.00		
Puffins			individuals	0.50		
Gull Eggs	individuals	0.30	individuals	0.30	individuals	0.30
Puffin Eggs			individuals	0.30		
Tern Eggs	individuals	0.05			individuals	0.05
Shorebird Eggs					individuals	0.10
Duck Eggs	individuals	0.15			individuals	0.15
Geese Eggs	See Comment	0.00				
Butter Clams	gallons	3.00	gallons	3.00	gallons	3.00
Razor Clams	gallons	3.00	gallons	3.00	gallons	3.00
Steamer Clams			gallons	3.00		
Littleneck Clams			gallons	3.00	gallons	3.00
Unknown Clams					gallons	3.00
Dungeness Crab	individuals	0.70	individuals	0.70	individuals	0.70
King Crab	individuals	2.30	individuals	2.30	individuals	2.30
Tanner Crab	individuals	1.60	individuals	1.60	individuals	1.60
Cockles	gallons	3.00	gallons	3.00	gallons	3.00
Geoducks			gallons	3.00	gallons	3.00
Mussels	gallons	1.50	gallons	1.50	gallons	1.50
Bidarkis (large)			gallons	3.00		
Bidarkis (small)	gallons	4.00	gallons	4.00	gallons	4.00
octopus	individuals	4.00	individuals	4.00	individuals	4.00
Sea Cucumber					gallons	2.00
Sea Urchin	gallons	0.50	gallons	0.50	gallons	0.50
Shrimp	gallons	2.00	gallons	2.00	gallons	2.00
Snails			gallons	1.50	gallons	1.50
Limpets			gallons	1.50	gallons	1.50
Whelk			gallons	1.50		
Berries	gallons	4.00	gallons	4.00	gallons	4.00
Plants/Greens/Mushrooms	gallons	4.00	gallons	4.00	gallons	4.00
Seaweed/Kelp (Food)					See Comment	0.00
Black Seaweed			gallons	4.00		

• "See comment" in the units column means the resource was not harvested or eaten.

No Information in units and conversion factor columns indicates resource not asked in region

APPENDIX C: SUPPLEMENTAL TABLES, CHENEGA BAY

Table C-1. Community, Household, and Per Capita Income, All Sources and by Employer Types, Chenega Bay, 1990/91

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$1,085,330.84	$51,682.42	$14,095.21
Earned Income	$913,626.00	$43,506.00	$11,865.27
Agriculture, Forestry, and Fishing	111,125.00	5,291.67	1443.18
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	111,125.00	5,291.67	1.443.18
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	111,125.00	5,291.67	1,443.18
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	54,195.17	2.580.72	703.83
Trade	0.00	0.00	0.00
Wholesale	0.00	0.00	0.00
Retail	0.00	0.00	0.00
Finance, Insurance, and Real Estate	144,060.00	6,860.00	1,870.91
Services	4,620.00	220.00	60.00
Government	389,611.83	18,552.94	5,059.89
Federal	AMT UNK	AMT UNK	AMT UNK
State	131446.00	6,259.33	1,707.09
Local	258,165.83	12,293.61	3,352.80
Local Government	104,184.50	4.961.17	1,353.05
Local Education	153,981.33	7,332.44	1,999.76
Unknown	210,014.00	10,000.67	2,727.45
Other Income	$171,704.84	$8,176.42	$2,229.93

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table C-2. Community, Household, and Per Capita Other Income by Source, Chenega Bay, 1990/91

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$171,704.84	$8,176.42	$2,229.93
Exxon Claims	16.67	AMT UNK	AMT UNK	AMT UNK
Aid to Families with Dependent Children	16.67	AMT UNK	AMT UNK	AMT UNK
Adult Public Assistance	16.67	AMT UNK	AMT UNK	AMT UNK
Exxon Damages	16.67	AMT UNK	AMT UNK	AMT UNK
Pension/Retirement	22.22	17,276.00	622.67	224.36
Longevity Bonus	22.22	14,000.00	666.67	161.82
Social Security	22.22	21,588.00	1,028.00	280.36
Workman's Comp./Insurance	16.67	AMT UNK	AMT UNK	AMT UNK
Energy Assistance	16.67	AMT UNK	AMT UNK	AMT UNK
Supplemental Security Income	22.22	26,880.00	1,280.00	349.09
Food Stamps	16.67	AMT UNK	AMT UNK	AMT UNK
Unemployment	18.87	AMT UNK	AMT UNK	AMT UNK
Native Corporation Dividend	61.11	18,608.33	886.11	241.67
Dividend/Interest	18.67	AMT UNK	AMT UNK	AMT UNK
Child Support	16.67	AMT UNK	AMT UNK	AMT UNK
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	11.11	AMT UNK	AMT UNK	AMT UNK
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	100.00	73,352.51	3,492.98	952.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table C-3. Employment by Industry Category, Chenega Bay, 1990/91

INCOME SOURCE	Employment					
	Households (n= 21)		Employed Adults (n= 46.67)		Jobs (n=63.00)	
	Number	Percentage	Number	Percentage	Number	Percentage
Agriculture, Forestry, and Fishing	7.00	33.33%	7.00	15.00%	7.00	11.11%
Agriculture	0.00	0.00%	0.00	0.00%	0.00	0.00%
Forestry	0.00	0.00%	0.00	0.00%	0.00	0.00%
Fishing, Hunting, Trapping	7.00	33.33%	7.00	15.00%	7.00	11.11%
Hatchery/Enhancement	0.00	0.00%	0.00	0.00%	0.00	0.00%
Commercial Fishing	7.00	33.33%	7.00	15.00%	7.00	11.11%
Hunting/Trapping	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mining	0.00	0.00%	0.00	0.00%	0.00	0.00%
Construction	0.00	0.00%	0.00	0.00%	0.00	0.00%
Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Cannery	0.00	0.00%	0.00	0.00%	0.00	0.00%
Other Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Logging/Timber	0.00	0.00%	0.00	0.00%	0.00	0.00%
Transportation, Communications, and Utilities	3.50	16.67%	7.00	15.00%	7.00	11.11%
Trade	0.00	0.00%	0.00	0.00%	0.00	0.00%
Wholesale	0.00	0.00%	0.00	0.00%	0.00	0.00%
Retail	0.00	0.00%	0.00	0.00%	0.00	0.00%
Finance, Insurance, and Real Estate	2.33	11.10%	2.33	4.99%	2.33	3.70%
Services	1.17	5.57%	1.17	2.51%	1.17	1.86%
Government	21.00	100.00%	26.83	57.49%	30.33	48.14%
Federal	1.17	5.57%	1.17	2.51%	1.17	1.86%
State	9.33	44.43%	14.00	30.00%	14.00	22.22%
Local	10.50	50.00%	11.67	25.01%	15.17	24.08%
Local Government	5.83	27.76%	5.83	12.49%	9.33	14.81%
Local Education	4.67	22.24%	5.83	12.49%	5.83	9.25%
Unknown	10.50	50.00%	15.17	32.50%	15.17	24.08%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table C-4. Estimated Amount of Resources Removed From Commercial Harvests, Chenega Bay, 1990/91

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		1,443.65	29.59	13.70
Fish		1,443.65	30.33	13.70
Salmon		758.23	26.64	7.20
Chum Salmon	52.50	365.40	39.56	3.47
Coho Salmon	33.25	227.10	72.17	2.16
Pink Salmon	14.00	30.66	5.28	0.29
Sockeye Salmon	26.83	121.02	20.87	1.15
Unknown Salmon	2.92	14.06	00.00	0.13
Non-Salmon Fish		685.42	35.83	6.51
Sablefish (Black Cod)	5.83	18.08	62.50	0.17
Greenling	9.33	37.33	00.00	0.35
Lingcod	9.33	37.33	00.00	0.35
Halibut	14.00	630.00	50.13	5.98

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table C-5. Estimated Salmon Harvest by Gear Type, Chenega Bay, 1990/91

		Me													
		Net		Seine		Other		Subsistence Gear Any Method		Removed from Commercial Catch		Rod and Reel		Any Method	
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	356.58	16.98	1.17	0.06	88.08	4.19	445.83	21.23	129.50	6.17	23.33	1.11	598.66	28.51
	pounds	1,359.79	64.75	2.56	0.12	674.67	32.13	2,037.02	97.00	758.23	36.11	51.10	2.43	2,846.35	135.54
Chum Salmon	numbers	65.64	3.13	0.00	0.00	14.58	0.69	80.22	3.82	52.50	2.50	0.00	0.00	132.72	6.32
	pounds	456.83	21.75	0.00	0.00	101.50	4.83	558.33	26.59	365.40	17.40	0.00	0.00	923.73	43.99
Coho Salmon	numbers	6.41	0.31	0.00	0.00	6.42	0.31	12.82	0.61	33.25	1.58	0.00	0.00	46.07	2.19
	pounds	43.75	2.08	0.00	0.00	43.83	2.09	87.57	4.17	227.10	10.81	0.00	0.00	314.67	14.98
Chinook Salmon	numbers	0.00	0.00	0.00	0.00	23.33	1.11	23.33	1.11	0.00	0.00	0.00	0.00	23.33	1.11
	pounds	0.00	0.00	0.00	0.00	433.53	20.64	433.53	20.64	0.00	0.00	0.00	0.00	433.53	20.64
Pink Salmon	numbers	182.78	8.70	1.17	0.06	43.75	2.08	227.70	10.84	14.00	0.67	23.33	1.11	265.03	12.62
	pounds	400.29	19.06	2.56	0.12	95.81	4.56	498.66	23.75	30.66	1.46	51.10	2.43	580.42	27.64
Sockeye Salmon	numbers	101.76	4.85	0.00	0.00	0.00	0.00	101.76	4.85	26.83	1.28	0.00	0.00	128.59	6.12
	pounds	458.92	21.85	0.00	0.00	0.00	0.00	458.92	21.85	121.02	5.76	0.00	0.00	579.94	27.62
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.92	0.14	0.00	0.00	2.92	0.14
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.06	0.67	0.00	0.00	14.06	0.67

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table C-6. Estimated Percentages of Salmon Harvest By Resource, Geartype, and Salmon Total Harvest Chenega Bay, 1990/91

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Other No.	Other Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
Salmon	total	59.56	47.77	0.19	0.09	14.71	23.70	74.47	71.57	21.63	26.64	3.90	1.80		
Chum Salmon (general)	geartype	18.41	33.60	0.00	0.00	16.56	15.04	17.99	27.41	40.54	48.19	0.00	0.00	22.17	32.45
	resource	49.45	49.45	0.00	0.00	10.99	10.99	60.44	60.44	39.56	39.56	0.00	0.00		
	total	10.96	16.05	0.00	0.00	2.44	3.57	13.40	19.62	8.77	12.84	0.00	0.00		
Coho Salmon	geartype	1.80	3.22	0.00	0.00	7.28	6.50	2.88	4.30	25.68	29.95	0.00	0.00	7.70	11.06
	resource	13.90	13.90	0.00	0.00	13.93	13.93	27.83	27.83	72.17	72.17	0.00	0.00		
	total	1.07	1.54	0.00	0.00	1.07	1.54	2.14	3.08	5.55	7.98	0.00	0.00		
Chinook Salmon	geartype	0.00	0.00	0.00	0.00	26.49	64.26	5.23	21.28	0.00	0.00	0.00	0.00	3.90	15.23
	resource	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	3.90	15.23	3.90	15.23	0.00	0.00	0.00	0.00		
Pink Salmon	geartype	51.26	29.44	100.00	100.00	49.67	14.20	51.07	24.48	10.81	4.04	100.00	100.00	44.27	20.39
	resource	68.97	68.97	0.44	0.44	16.51	16.51	85.91	85.91	5.28	5.28	8.80	8.80		
	total	30.53	14.06	0.19	0.09	7.31	3.37	38.03	17.52	2.34	1.08	3.90	1.80		
Sockeye Salmon	geartype	28.54	33.75	0.00	0.00	0.00	0.00	22.82	22.53	20.72	15.96	0.00	0.00	21.48	20.37
	resource	79.13	79.13	0.00	0.00	0.00	0.00	79.13	79.13	20.87	20.87	0.00	0.00		
	total	17.00	16.12	0.00	0.00	0.00	0.00	17.00	16.12	4.48	4.25	0.00	0.00		
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	1.85	0.00	0.00	0.49	0.49
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.49	0.00	0.00		

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table C-7. Percentage Households Harvesting Salmon By Gear Type and Species, Chenega Bay, 1990/91

Resource	Net	Seine	Other	Subsistence Gear	Removed om Commercial Catch	Rod and Reel	Any Method
Salmon	33.33	5.56	22.22	50.00	11.11	5.56	61.11
Chum Salmon	16.67	0.00	5.56	16.67	5.56	0.00	22.22
Coho Salmon	5.56	0.00	5.56	11.11	11.11	0.00	22.22
Chinook Salmon	0.00	0.00	5.56	5.56	0.00	0.00	5.56
Pink Salmon	27.78	5.56	16.67	44.44	5.56	5.56	50.00
Sockeye Salmon	22.22	0.00	0.00	22.22	5.56	0.00	22.22
Unknown Salmon	0.00	0.00	0.00	0.00	5.56	0.00	5.56

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table C-8. Estimated Harvest of Fish Other Than Salmon By Gear Type, Chenega Bay, 1990/91

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	875.67	41.70	685.42	32.64	351.63	16.74	1,912.72	91.08
Lingcod	pounds	0.00	0.00	37.33	1.78	0.00	0.00	37.33	1.78
Pacific Cod (Gray)	pounds	29.16	1.39	0.00	0.00	7.47	0.36	36.62	1.74
Sablefish (Black Cod)	pounds	10.85	0.52	18.08	0.86	0.00	0.00	28.93	1.38
Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	pounds	469.35	22.35	630.00	30.00	157.50	7.50	1,256.85	59.85
Herring	pounds	58.31	2.78	0.00	0.00	0.00	0.00	58.31	2.78
Herring Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roe on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red Rockfish	pounds	308.00	14.67	0.00	0.00	186.67	8.89	494.67	23.56
Eulachon (Hooligan, Candlefish)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Smelt	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, *Division of Subsistence, Household Survey*, 1991

Table C-9. Estimated Percentages of Fish Other Than Salmon Harvested By Gear 1990/91

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.
Non-Salmon Fish	resource	45.78	35.83	18.38
Lingcod	resource	0.00	100.00	0
Pacific Cod (Gray)	resource	79.61	0.00	20.39
Sablefish (Black Cod)	resource	37.50	62.50	0
Flounder	resource	0.00	0.00	0
Halibut	resource	37.34	50.13	12.53
Herring	resource	100.00	0.00	0
Herring Roe	resource	0.00	0.00	0
Roe on Kelp	resource	0.00	0.00	0
Sac Roe	resource	0.00	0.00	0
Black Rockfish (black bass)	resource	0.00	0.00	0
Red Rockfish	resource	62.26	0.00	37.74
Eulachon (Hooligan, Candlefish)	resource	0.00	0.00	0
Unknown Smelt	resource	0.00	0.00	0
Dolly Varden	resource	0.00	0.00	0
Lake Trout	resource	0.00	0.00	0

RCE: Alaska Department of Fish a Game, Division of Subsistence, Household Survey, 1991

Table C-10. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Chenega Bay,1990/91

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Any Method
Non-Salmon Fish	22.22	11.11	16.67	33.33
Lingcod	0.00	5.56	0.00	5.56
Pacific Cod (Gray)	5.56	0.00	5.56	11.11
Sablefish (Black Cod)	5.56	5.56	0.00	5.56
Flounder	0.00	0.00	0.00	0.00
Halibut	16.67	11.11	5.56	33.33
Herring	5.56	0.00	0.00	5.56
Herring Roe	0.00	0.00	0.00	0.00
Roe on Kelp	0.00	0.00	0.00	0.00
Sac Roe	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	0.00	0.00	0.00	0.00
Red Rockfish	16.67	0.00	11.11	27.78
Eulachon (Hooligan, Candl	0.00	0.00	0.00	0.00
Unknown Smelt	0.00	0.00	0.00	0.00
Dolly Varden	0.00	0.00	0.00	0.00
Lake Trout	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

APPENDIX D: SUPPLEMENTAL TABLES, TATITLEK

Table D-1. Community, Household, and Per Capita Incomes, All Sources and by Employer Types, Tatitlek, 1990/91

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$852,608.65	$30,450.31	$6,902.07
Earned Income	$597,450.82	$21,337.53	$4,836.51
Agriculture, Forestry, and Fishing	106647.06	3,808.82	063.33
Agriculture	0.00	0.00	0.00
Forestry	14,411.76	514.71	116.67
Fishing, Hunting, Trapping	92,235.29	3,294.12	746.67
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	92,235.29	3,294.12	746.67
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	60941.18	2,176.47	493.33
Trade	0.00	0.00	0.00
Wholesale	0.00	0.00	0.00
Retail	0.00	0.00	0.00
Finance, Insurance, and Real Estate	0.00	0.00	0.00
Services	113,627.29	4,058.12	919.84
Government	316,235.29	11,294.12	2,560.00
Federal	0.00	0.00	0.00
State	17,294.12	617.65	140.00
Local	298,941.18	10,676.47	2,420.00
Local Government	40.35294	1441.18	326.67
Local Education	258,588.24	9,235.29	2,093.33
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$255,157.82	$9,112.78	$2.065.56

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-2. Community, Household, and Per Capita Other Income by Source, Tatitlek, 1990/91

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$255,157.82	$9,112.78	$2,065.56
Exxon Claims	17.65	AMT UNK	AMT UNK	AMT UNK
Aid to Families with Dependent Children	17.65	AMT UNK	AMT UNK	AMT UNK
Adult Public Assistance	17.65	AMT UNK	AMT UNK	AMT UNK
Exxon Damages	17.65	AMT UNK	AMT UNK	AMT UNK
Pension/Retirement	17.65	AMT UNK	AMT UNK	AMT UNK
Longevity Bonus	17.65	AMT UNK	AMT UNK	AMT UNK
Social Security	29.41	30,388.24	1,085.29	246.00
Workman's Comp./Insurance	17.65	AMT UNK	AMT UNK	AMT UNK
Energy Assistance	29.41	4,941.18	176.47	40.00
Supplemental Security Income	17.65	AMT UNK	AMT UNK	AMT UNK
Food Stamps	17.65	AMT UNK	AMT UNK	AMT UNK
Unemployment	35.29	63444.71	2,265.88	513.60
Native Corporation Dividend	58.82	18941.18	676.47	153.33
Dividend/Interest	23.53	19,764.71	705.88	160.00
Child Support	17.65	AMT UNK	AMT UNK	AMT UNK
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	100.00	117,677.82	4,202.78	952.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-3. Employment by Industry Category, Tatitlek, 1990/91

INCOME SOURCE	Employment					
	Households (n= 28)		Employed Adults (n= 56.00)		Jobs (n=80.71)	
	Number	Percentage	Number	Percentage	Number	Percentage
Agriculture, Forestry, and Fishing	18.12	64.71%	19.76	35.29%	19.76	24.48%
Agriculture	0.00	0.00%	0.00	0.00%	0.00	0.00%
Forestry	8.24	29.43%	9.88	17.64%	9.88	12.24%
Fishing, Hunting, Trapping	9.88	35.29%	9.88	17.64%	9.88	12.24%
Hatchery/Enhancement	0.00	0.00%	0.00	0.00%	0.00	0.00%
Commercial Fishing	9.88	35.29%	9.88	17.64%	9.88	12.24%
Hunting/Trapping	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mining	0.00	0.00%	0.00	0.00%	0.00	0.00%
Construction	0.00	0.00%	0.00	0.00%	0.00	0.00%
Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Cannery	0.00	0.00%	0.00	0.00%	0.00	0.00%
Other Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Logging/Timber	0.00	0.00%	0.00	0.00%	0.00	0.00%
Transportation, Communications, and Utilities	6.59	23.54%	6.59	11.77%	8.24	10.21%
Trade	0.00	0.00%	0.00	0.00%	0.00	0.00%
Wholesale	0.00	0.00%	0.00	0.00%	0.00	0.00%
Retail	0.00	0.00%	0.00	0.00%	0.00	0.00%
Finance, Insurance, and Real Estate	0.00	0.00%	0.00	0.00%	0.00	0.00%
Services	6.59	23.54%	8.24	14.71%	8.24	10.21%
Government	18.12	64.71%	19.76	35.29%	21.41	26.53%
Federal	0.00	0.00%	0.00	0.00%	0.00	0.00%
State	6.59	23.54%	6.59	11.77%	6.59	6.17%
Local	11.53	41.18%	13.18	23.54%	14.82	18.36%
Local Government	4.94	17.64%	4.94	8.82%	6.59	8.17%
Local Education	6.59	23.54%	8.24	14.71%	8.24	10.21%
Unknown	9.88	35.29%	23.66	41.18%	23.96	28.57%

OURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-4. Estimated Amount of Resources Removed From Commercial Harvests, Tatitlek, 1990/91

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
[illegible]		3,034.66	24.30	16.09
Fish		3,034.66	24.77	16.09
Salmon		2,443.37	33.12	12.95
Chum Salmon	42.00	292.32	25.37	1.55
Coho Salmon	66.71	455.60	12.09	2.42
Pink Salmon	8.24	18.04	2.31	0.10
Sockeye Salmon	18.12	81.71	100.00	0.43
Unknown Salmon	331.06	1,595.70	100.00	8.46
Non-Salmon Fish		591.29	12.13	3.13
Cod	49.41	158.12	100.00	0.84
Pacific Cod (Gray)	49.41	158.12	100.00	0.84
Halibut	2.31	103.76	11.76	0.55
Rockfish	82.35	329.41	59.26	1.75
Red Rockfish	82.35	329.41	66.67	1.75

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-5. Estimated Salmon Harvest by Gear Type, Tatitlek, 1990/91

		Subsistence Methods								Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Other		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	510.59	18.24	0.00	0.00	118.59	4.24	629.18	22.47	466.12	16.65	326.94	11.68	1,422.24	50.79
	pounds	3,426.95	122.39	0.00	0.00	267.35	9.55	3,694.30	131.94	2,443.37	87.26	1,239.50	44.27	7,377.18	263.47
Chum Salmon (genera	numbers	123.53	4.41	0.00	0.00	0.00	0.00	123.53	4.41	42.00	1.50	0.00	0.00	165.53	5.91
	pounds	859.76	30.71	0.00	0.00	0.00	0.00	859.76	30.71	292.32	10.44	0.00	0.00	1,152.08	41.15
Coho Salmon	numbers	370.59	13.24	0.00	0.00	1.65	0.06	372.24	13.29	66.71	2.38	112.82	4.03	551.76	19.71
	pounds	2,531.12	90.40	0.00	0.00	11.25	0.40	2,542.37	90.80	455.60	16.27	770.58	27.52	3,768.55	134.59
Chinook Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pink Salmon	numbers	16.47	0.59	0.00	0.00	116.94	4.18	133.41	4.76	8.24	0.29	214.12	7.65	355.76	12.71
	pounds	36.07	1.29	0.00	0.00	256.10	9.15	292.17	10.43	18.04	0.64	468.92	16.75	779.12	27.83
Sockeye Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.12	0.65	0.00	0.00	18.12	0.65
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.71	2.92	0.00	0.00	81.71	2.92
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	331.06	11.82	0.00	0.00	331.06	11.82
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,595.70	56.99	0.00	0.00	1,595.70	56.99

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-6. Estimated Percentages of Salmon Harvest by Resource, Gear Type, and Salmon Total Harvest, Tatitlek, 1990/91

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Other No.	Other Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
	total	35.90	46.45	0.00	0.00	8.34	3.62	44.24	50.08	32.77	33.12	22.99	16.80		
Chum Salmon	geartype	24.19	25.09	0.00	0.00	0.00	0.00	19.63	23.27	9.01	11.96	0.00	0.00	11.64	15.62
	resource	74.63	74.63	0.00	0.00	0.00	0.00	74.63	74.63	25.37	25.37	0.00	0.00		
	total	8.69	11.65	0.00	0.00	0.00	0.00	8.69	11.65	2.95	3.96	0.00	0.00		
Coho Salmon	geartype	72.58	73.86	0.00	0.00	1.39	4.21	59.16	68.82	14.31	18.65	34.51	62.17	38.80	51.08
	resource	67.16	67.16	0.00	0.00	0.30	0.30	67.46	67.46	12.09	12.09	20.45	20.45		
	total	26.06	34.31	0.00	0.00	0.12	0.15	26.17	34.46	4.69	6.18	7.93	10.45		
Chinook Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Pink Salmon	geartype	3.23	1.05	0.00	0.00	98.61	95.79	21.20	7.91	1.77	0.74	65.49	37.83	25.01	10.56
	resource	4.63	4.63	0.00	0.00	32.87	32.87	37.50	37.50	2.31	2.31	60.19	60.19		
	total	1.16	0.49	0.00	0.00	8.22	3.47	9.38	3.96	0.58	0.24	15.06	6.36		
Sockeye Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.89	3.34	0.00	0.00	1.27	1.11
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.11	0.00	0.00		
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.02	65.31	0.00	0.00	23.28	21.63
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.28	21.63	0.00	0.00		

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-7. Percentage Households Harvesting Salmon by Gear Type and Species, Tatitlek, 1990/91

Resource	Subsistence Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Other	Any Subsistence Gear			
Salmon	35.29	0.00	29.41	47.06	35.29	41.18	82.35
Chum Salmon	11.76	0.00	0.00	11.76	17.65	0.00	23.53
Coho Salmon	35.29	0.00	5.88	41.18	29.41	29.41	76.47
Chinook Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pink Salmon	5.88	0.00	29.41	29.41	5.88	17.65	47.06
Sockeye Salmon	0.00	0.00	0.00	0.00	11.76	0.00	11.76
Unknown Salmon	0.00	0.00	0.00	0.00	5.88	0.00	5.88

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-8. Estimated Harvest of Fish Other Than Salmon By Gear Type, Tatitlek, 1990/91

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	3,749.40	133.91	591.29	21.12	534.47	19.09	4,875.16	174.11
Lingcod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod (Gray)	pounds	0.00	0.00	158.12	5.65	0.00	0.00	158.12	5.65
Sablefish (Black Cod)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	pounds	444.71	15.88	103.76	3.71	333.53	11.91	882.00	31.50
Herring	pounds	1,778.82	63.53	0.00	0.00	81.53	2.91	1,860.35	66.44
Herring Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roe on Kelp	pounds	1,389.99	49.64	0.00	0.00	0.00	0.00	1,389.99	49.64
Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	pounds	37.06	1.32	0.00	0.00	24.71	0.88	61.76	2.21
Red Rockfish	pounds	98.82	3.53	329.41	11.76	65.88	2.35	494.12	17.65
Eulachon (Hooligan, Candlefish)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Smelt	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Trout	pounds	0.00	0.00	0.00	0.00	28.82	1.03	28.82	1.03

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-9. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Tatitlek, 1990/91

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.
Non-Salmon Fish	resource	76.91	12.13	10.96
Lingcod	resource	0.00	0.00	0
Pacific Cod (Gray)	resource	0.00	100.00	0
Sablefish (Black Cod)	resource	0.00	0.00	0
Flounder	resource	0.00	0.00	0
Halibut	resource	50.42	11.76	37.82
Herring	resource	95.62	0.00	4.38
Herring Roe	resource	0.00	0.00	0
Roe on Kelp	resource	100.00	0.00	0
Sac Roe	resource	0.00	0.00	0
Black Rockfish (black bass)	resource	60.00	0.00	40
Red Rockfish	resource	20.00	66.67	13.33
Eulachon (Hooligan, Candlefish)	resource	0.00	0.00	0
Unknown Smelt	resource	0.00	0.00	0
Dolly Varden	resource	0.00	0.00	0
Lake Trout	resource	0.00	0.00	100

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table D-10. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Tatitlek, 1990/91

Resource	Subsist⊂ ce ∞ ar	Removed from Commercial Catch	Rod and Reel	Any Method
Non-Salmon Fish	5≦82	11.76	29.41	76.47
Lingcod	○00	0.00	0.00	0.00
Pacific Cod (Gray)	○00	5.88	0.00	5.88
Sablefish (Black Cod)	○00	0.00	0.00	0.00
Flounder	○00	0.00	0.00	0.00
Halibut	11.76	5.88	11.76	29.41
Herring	5.88	0.00	17.65	23.53
Herring Roe	0.00	0.00	0.00	0.00
Roe on Kelp	58.82	0.00	0.00	58.82
Sac Roe	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	5.88	0.00	5.88	11.76
Red Rockfish	5.88	5.88	5.88	17.65
Eulachon (Hooligan, Candlefish)	0.00	0.00	0.00	0.00
Unknown Smelt	0.00	0.00	0.00	0.00
Dolly Varden	0.00	0.00	0.00	0.00
Lake Trout	0.00	0.00	5.88	5.88

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

APPENDIX E: SUPPLEMENTAL TABLES, NANWALEK

Table E-1. Community, Household, and Per Capita Income, All Sources and by Employer Types, Nanwalek, 1990/91

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$923,413.13	$22,522.27	$5,020.89
Earned Income	$453,317.35	$11.056.52	$2,464.83
Agriculture, Forestry, and Fishing	172,186.68	4,199.68	936.23
Agriculture	0.00	0.00	0.00
Forestry	142,198.10	3,468.25	773.18
Fishing, Hunting, Trapping	29.988.57	731.43	163.06
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	29,988.57	731.43	163.06
Hunting/Trapping	0.00	0.00	0.00
Mining	AMT UNK	AMT UNK	AMT UNK
Construction	4,100.00	100.00	22.29
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	10,542.86	257.14	57.32
Trade	21,495.71	524.29	116.88
Wholesale	0.00	0.00	0.00
Retail	21,495.71	524.29	116.88
Finance, Insurance, and Real Estate	7,350.71	179.29	39.97
Services	133,890.30	39265.62	728.00
Government	103,751.09	2,530.51	564.13
Federal	5,763.43	140.57	31.34
State	1,271 .OO	31.oo	6.91
Local	96,716.66	2,358.94	525.86
Local Government	14,057.14	342.86	76.43
Local Education	82,659.51	2,016.09	449.45
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$470,095.78	$11,465.75	$2,556.06

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-2. Community, Household, and Per Capita Other Income by Source, Nanwalek, 1990/91

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$470,095.78	$11,465.75	$2,556.06
Exxon Claims	34.29	33,512.23	817.37	182.22
Aid to Families with Dependent Children	14.29	16.754.36	408.64	91.10
Adult Public Assistance	2.86	AMT UNK	AMT UNK	AMT UNK
Exxon Damages	2.86	AMT UNK	AMT UNK	AMT UNK
Pension/Retirement	2.86	AMT UNK	AMT UNK	AMT UNK
Longevity Bonus	8.57	10542.86	257.14	57.32
Social Security	11.43	12,742.02	310.78	69.28
Workman's Comp./Insurance	11.43	2.967.62	72.38	16.14
Energy Assistance	37.14	4,944.21	120.59	26.88
Supplemental Security Income	8.57	22,653.09	552.51	123.17
Food Stamps	11.43	3,389.33	82.67	18.43
Unemployment	54.29	75,737.35	1847.25	411.81
Native Corporation Dividend	100.00	111,650.45	2,723.18	607.08
Dividend/Interest	2.86	AMT UNK	AMT UNK	AMT UNK
Child Support	2.86	AMT UNK	AMT UNK	AMT UNK
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	100.00	175,202.27	4,273.23	952.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-3. Employment by Industry Category, Nanwalek, 1990/91

INCOME SOURCE	Households (n= 41)		Employment: Employed Adults (n= 66.77)		Jobs (n=83.17)	
	Number	Percentage	Number	Percentage	Number	Percentage
Agriculture, Forestry, and Fishing	25.77	62.85%	29.29	43.87%	31.63	38.03%
Agriculture	0.00	0.00%	0.00	0.00%	0.00	0.00%
Forestry	21.09	5144%	24.60	36.84%	26.94	32.39%
Fishing, Hunting, Trapping	4.69	11.44%	4.69	7.02%	4.69	5.64%
Hatchery/Enhancement	0.00	0.00%	0.00	0.00%	0.00	0.00%
Commercial Fishing	4.69	11.44%	4.69	7.02%	4.69	5.64%
Hunting/Trapping	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mining	1.17	2.85%	1.17	1.75%	1.17	1.41%
Construction	1.17	2.85%	1.17	1.75%	1.17	1.41%
Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Cannery	0.00	0.00%	0.00	0.00%	0.00	0.00%
Other Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Logging/Timber	0.00	0.00%	0.00	0.00%	0.00	0.00%
Transportation, Communications, and Utilities	1.17	2.85%	1.17	1.75%	1.17	1.41%
Trade	8.20	20.00%	8.20	12.28%	8.20	9.86%
Wholesale	0.00	0.00%	0.00	0.00%	0.00	0.00%
Retail	8.20	20.00%	8.20	12.28%	8.20	9.86%
Finance, Insurance, and Real Estate	2.34	5.71%	2.34	3.50%	2.34	2.81%
Services	12.89	31.44%	14.06	21.06%	14.06	16.91%
Government	15.23	37.15%	18.74	28.07%	18.74	22.53%
Federal	2.34	5.71%	2.34	3.50%	2.34	2.81%
State	1.17	2.85%	3.51	5.26%	3.51	4.22%
Local	11.71	28.56%	12.89	19.31%	12.89	15.50%
Local Government	3.51	8.56%	3.51	5.26%	3.51	4.22%
Local Education	6.20	20.00%	9.37	14.03%	9.37	11.27%
Unknown	3.51	8.56%	4.69	7.02%	4.69	5.64%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-4. Estimated Amount of Resources Removed from Commercial Harvests, Nanwalek, 1990/91

There were no resources removed from commercial harvests in Nanwalek for home use or sharing in the 1990/91 study year

Table E-5. Estimated Salmon Harvest by Gear Type, Nanwalek, 1990/91

		Subsistence Methods								Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Other		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	1,201.89	29.31	0.00	0.00	48.03	1.17	1,249.91	30.49	0.00	0.00	4,818.09	117.51	6,068.00	148.00
	pounds	3,900.62	95.14	0.00	0.00	96.06	2.34	3,996.68	97.48	0.00	0.00	12,822.81	312.75	16,819.49	410.23
Chum Salmon	numbers	77.31	1.89	0.00	0.00	0.00	0.00	77.31	1.89	0.00	0.00	52.71	1.29	130.03	3.17
	pounds	510.27	12.45	0.00	0.00	0.00	0.00	510.27	12.45	0.00	0.00	347.91	8.49	858.19	20.93
Coho Salmon	numbers	93.71	2.29	0.00	0.00	0.00	0.00	93.71	2.29	0.00	0.00	775.49	18.91	869.20	21.20
	pounds	496.69	12.11	0.00	0.00	0.00	0.00	496.69	12.11	0.00	0.00	4,110.07	100.25	4,606.76	112.36
Chinook Salmon	numbers	53.89	1.31	0.00	0.00	0.00	0.00	53.89	1.31	0.00	0.00	8.20	0.20	62.09	1.51
	pounds	533.47	13.01	0.00	0.00	0.00	0.00	533.47	13.01	0.00	0.00	81.18	1.98	614.65	14.99
Pink Salmon	numbers	548.23	13.37	0.00	0.00	48.03	1.17	596.26	14.54	0.00	0.00	2,647.43	64.57	3,243.69	79.11
	pounds	1,096.46	26.74	0.00	0.00	96.06	2.34	1,192.51	29.09	0.00	0.00	5,294.86	129.14	6,487.37	158.23
Sockeye Salmon	numbers	414.69	10.11	0.00	0.00	0.00	0.00	414.69	10.11	0.00	0.00	700.51	17.09	1,115.20	27.20
	pounds	1,244.06	30.34	0.00	0.00	0.00	0.00	1,244.06	30.34	0.00	0.00	2,101.54	51.26	3,345.60	81.60
Spawnouts, Salmon	numbers	14.06	0.34	0.00	0.00	0.00	0.00	14.06	0.34	0.00	0.00	633.74	15.46	647.80	15.80
	pounds	19.68	0.48	0.00	0.00	0.00	0.00	19.68	0.48	0.00	0.00	887.24	21.64	906.92	22.12

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-6. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Nanwalek, 1990/91

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Other No.	Other Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
	total	19.81	23.19	0.00	0.00	0.79	0.57	20.60	23.76	0.00	0.00	79.40	76.24		
Chum Salmon	geartype	6.43	13.08	0.00	0.00	0.00	0.00	6.19	12.77	0.00	0.00	1.09	2.71	2.14	5.10
	resource	59.46	59.46	0.00	0.00	0.00	0.00	59.46	59.46	0.00	0.00	40.54	40.54		
	total	1.27	3.03	0.00	0.00	0.00	0.00	1.27	3.03	0.00	0.00	0.87	2.07		
Coho Salmon	geartype	7.80	12.73	0.00	0.00	0.00	0.00	7.50	12.43	0.00	0.00	16.10	32.05	14.32	27.39
	resource	10.78	10.78	0.00	0.00	0.00	0.00	10.78	10.78	0.00	0.00	89.22	89.22		
	total	1.54	2.95	0.00	0.00	0.00	0.00	1.54	2.95	0.00	0.00	12.78	24.44		
Chinook Salmon	geartype	4.48	13.68	0.00	0.00	0.00	0.00	4.31	13.35	0.00	0.00	0.17	0.63	1.02	3.65
	resource	86.79	86.79	0.00	0.00	0.00	0.00	86.79	86.79	0.00	0.00	13.21	13.21		
	total	0.89	3.17	0.00	0.00	0.00	0.00	0.89	3.17	0.00	0.00	0.14	0.48		
Pink Salmon	geartype	45.61	28.11	0.00	0.00	100.00	100.00	47.70	29.84	0.00	0.00	54.95	41.29	53.46	38.57
	resource	16.90	16.90	0.00	0.00	1.48	1.48	18.38	18.38	0.00	0.00	81.62	81.62		
	total	9.03	6.52	0.00	0.00	0.79	0.57	9.83	7.09	0.00	0.00	43.63	31.48		
Sockeye Salmon	geartype	34.50	31.89	0.00	0.00	0.00	0.00	33.18	31.13	0.00	0.00	14.54	16.39	18.38	19.89
	resource	37.18	37.18	0.00	0.00	0.00	0.00	37.18	37.18	0.00	0.00	62.82	62.82		
	total	6.83	7.40	0.00	0.00	0.00	0.00	6.83	7.40	0.00	0.00	11.54	12.49		
Spawnouts, Salmon	geartype	1.17	0.50	0.00	0.00	0.00	0.00	1.12	0.49	0.00	0.00	13.15	6.92	10.68	5.39
	resource	2.17	2.17	0.00	0.00	0.00	0.00	2.17	2.17	0.00	0.00	97.83	97.83		
	total	0.23	0.12	0.00	0.00	0.00	0.00	0.23	0.12	0.00	0.00	10.44	5.28		

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-7. Percentage of Households Harvesting Salmon By Gear Type and Species, Nanwalek, 1990/9

Resource	Subsistence Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Other	Any Subsistence Gear			
Salmon	40.00	0.00	5.71	42.86	0.0	82.86	85.71
Chum Salmon	11.43	0.00	0.00	11.43	0.00	17.14	22.86
Coho Salmon	8.57	0.00	0.00	8.57	0.00	71.43	74.29
Chinook Salmon	25.71	0.00	0.00	25.71	0.00	8.57	28.57
Pink Salmon	22.86	0.00	5.71	28.57	0.00	68.57	74.29
Sockeye Salmon	37.14	0.00	0.00	37.14	0.00	57.14	77.14
Spawnouts, Salmon	2.86	0.00	0.00	2.86	0.00	31.43	34.29

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-8. Estimated Harvest of Fish Other Than Salmon By Gear Type, Nanwalek, 1990/91

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	4,724.35	115.23	0.00	0.00	5,644.50	137.67	10,368.85	252.90
Lingcod	pounds	46.86	1.14	0.00	0.00	51.54	1.26	98.40	2.40
Pacific Tom Cod	pounds	19.91	0.49	0.00	0.00	12.30	0.30	32.21	0.79
Pacific Cod (Gray)	pounds	476.07	11.61	0.00	0.00	674.74	16.46	1,150.81	28.07
Sablefish (Black Cod)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flounder	pounds	59.74	1.46	0.00	0.00	302.23	7.37	361.97	8.83
Sole	pounds	0.00	0.00	0.00	0.00	11.71	0.29	11.71	0.29
Halibut	pounds	1,212.66	29.58	0.00	0.00	1,986.25	48.45	3,198.90	78.02
Herring	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roe on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	pounds	52.71	1.29	0.00	0.00	70.29	1.71	123.00	3.00
Red Rockfish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irish Lord	pounds	0.00	0.00	0.00	0.00	22.26	0.54	22.26	0.54
Unknown Sculpin	pounds	1.17	0.03	0.00	0.00	0.00	0.00	1.17	0.03
Eulachon (Hooligan, Candlefish)	pounds	59.96	1.46	0.00	0.00	0.00	0.00	59.96	1.46
Unknown Smelt	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	pounds	0.00	0.00	0.00	0.00	51.54	1.26	51.54	1.26
Groundfish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolf Eel (Wolffish)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shark	pounds	10.54	0.26	0.00	0.00	0.00	0.00	10.54	0.26
Walleye Pollock (Whiting)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	2,630.56	64.16	0.00	0.00	1,779.40	43.40	4,409.96	107.56
Rainbow Trout	pounds	65.60	1.60	0.00	0.00	619.92	15.12	685.52	16.72
Steelhead	pounds	55.76	1.36	0.00	0.00	42.64	1.04	98.40	2.40
Unknown Trout	pounds	32.80	0.80	0.00	0.00	19.68	0.48	52.48	1.28

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-9. Estimated Percentages of Fish Other Than Salmon Harvested by Gear Type, Nanwalek, 1990/91

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.
Non-Salmon Fish	resource	45.56	0.00	54.44
Lingcod	resource	47.62	0.00	52.38
Pacific Tom Cod	resource	61.82	0.00	38.18
Pacific Cod (Gray)	resource	41.37	0.00	58.63
Sablefish (Black Cod)	resource	0.00	0.00	0
Flounder	resource	16.50	0.00	83.5
Sole	resource	0.00	0.00	100
Halibut	resource	37.91	0.00	62.09
Herring	resource	0.00	0.00	0
Herring Roe	resource	0.00	0.00	0
Roe on Kelp	resource	0.00	0.00	0
Sac Roe	resource	0.00	0.00	0
Black Rockfish (black bass)	resource	42.86	0.00	57.14
Red Rockfish	resource	0.00	0.00	0
Irish Lord	resource	0.00	0.00	100
Unknown Sculpin	resource	'00.00	0.00	0
Eulachon (Hooligan, Candlefish)	resource	.00.00	0.00	0
Unknown Smelt	resource	0.00	0.00	0
Unknown Greenling	resource	0.00	0.00	100
Groundfish	resource	0.00	0.00	0
Wolf Eel (Wolffish)	resource	0.00	0.00	0
Shark	resource	00.00	0.00	0
Walleye Pollock (Whiting)	resource	0.00	0.00	0
Dolly Varden	resource	59.65	0.00	40.35
Rainbow Trout	resource	9.57	0.00	90.43
Steelhead	resource	56.67	0.00	43.33
Unknown Trout	resource	62.50	0.00	37.5

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table E-10. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Nanwalek, 1990/91

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Any Method
Non-Salmon Fish	68.57	0.00	77.14	94.29
Lingcod	2.86	0.00	8.57	11.43
Pacific Tom Cod	5.71	0.00	11.43	17.14
Pacific Cod (Gray)	20.00	0.00	31.43	51.43
Sablefish (Black Cod)	0.00	0.00	0.00	0.00
Flounder	5.71	0.00	25.71	31.43
Sole	0.00	0.00	2.86	2.86
Halibut	22.86	0.00	28.57	51.43
Herring	0.00	0.00	0.00	0.00
Herring Roe	0.00	0.00	0.00	0.00
Roe on Kelp	0.00	0.00	0.00	0.00
Sac Roe	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	2.86	0.00	2.86	5.71
Red Rockfish	0.00	0.00	0.00	0.00
Irish Lord	0.00	0.00	20.00	20.00
Unknown Sculpin	2.86	0.00	0.00	2.86
Eulachon (Hooligan, Candlefish)	11.43	0.00	0.00	11.43
Unknown Smelt	0.00	0.00	0.00	0.00
Unknown Greenling	0.00	0.00	11.43	11.43
Groundfish	0.00	0.00	0.00	0.00
Wolf Eel (Wolffish)	0.00	0.00	0.00	0.00
Shark	2.86	0.00	0.00	2.86
Walleye Pollock (Whiting)	0.00	0.00	0.00	0.00
Dolly Varden	45.71	0.00	54.29	85.71
Rainbow Trout	5.71	0.00	37.14	42.86
Steelhead	5.71	0.00	17.14	22.86
Unknown Trout	2.86	0.00	2.86	5.71

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

APPENDIX F: SUPPLEMENTAL TABLES, PORT GRAHAM

Table F-1. Community, Household, and Per Capita Incomes, All Sources and by Employer Types, Port Graham, 1990/91

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$1,442,098.86	$26,219.98	$8,803.79
Earned Income	$908,853.70	$16,524.61	$5548.41
Agriculture, Forestry, and Fishing	294,813.43	5,360.24	1,799.79
Agriculture	0.00	0.00	0.00
Forestry	26,306.74	478.30	160.60
Fishing, Hunting, Trapping	268,506.69	4,881.94	1,639.19
Hatchery/Enhancement	AMT UNK	AMT UNK	AMT UNK
Commercial Fishing	268,506.69	4,881.94	1,639.19
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	5,380.43	97.83	32.85
Manufacturing	71,739.13	1,304.35	437.96
Cannery	71,739.13	1,304.35	437.96
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	12.195.65	221.74	74.45
Trade	59,384.06	1.079.71	362.53
Wholesale	0.00	0.00	0.00
Retail	59,384.06	1,079.71	362.53
Finance, Insurance, and Real Estate	57,367.39	1,043.04	350.22
Services	209,375.78	3,806.83	1,278.21
Government	194,652.17	3,539.13	1,188.32
Federal	28,695.65	521.74	175.18
State	28,695.65	521.74	175.18
Local	137,260.87	2,495.65	837.96
Local Government	45,434.78	826.09	277.37
Local Education	91,826.09	1,669.57	580.58
Unknown	394565	71.74	24.09
Other Income	$533,245.17	$9,695.37	$3,255.38

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-2. Community, Household, and Per Capita Other Income by Source, Port Graham, 1990/91

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$533,245.17	$9,695.37	$3,255.38
Exxon Claims	19.57	27440.22	498.91	167.52
Aid to Families with Dependent Children	13.04	AMT UNK	AMT UNK	AMT UNK
Adult Public Assistance	13.04	AMT UNK	AMT UNK	AMT UNK
Exxon Damages	10.87	AMT UNK	AMT UNK	AMT UNK
Pension/Retirement	15.22	44,609.78	811.09	272.34
Longevity Bonus	19.57	24,884.51	452.45	151.92
Social Security	28.09	62.604.95	1,138.27	382.19
Workman's Comp./Insurance	10.87	AMT UNK	AMT UNK	AMT UNK
Energy Assistance	34.78	6,164.25	112.08	37.63
Supplemental Security Income	13.64	40.977.39	745.94	250.16
Food Stamps	21.74	9,613.04	174.78	58.89
Unemployment	36.96	60,317.66	1,096.68	368.23
Native Corporation Dividend	32.61	24966.68	437.58	146.92
Dividend/Interest	10.87	AMT UNK	AMT UNK	AMT UNK
Child Support	17.39	76,521.74	1,391.30	467.15
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	100.00	156,044.94	2,837.18	952.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-3. Employment by Industry Category, Port Graham, 1990/91

INCOME SOURCE	Households (n= 55)		Employment: Employed Adults (n= 84.89)		Jobs (n=114.78)	
	Number	Percentage	Number	Percentage	Number	Percentage
Agriculture, Forestry, and Fishing	34.67	63.04%	38.28	45.07%	39.46	34.38%
Agriculture	0.00	0.00%	0.00	0.00%	0.00	0.00%
Forestry	7.17	13.04%	8.37	9.86%	9.57	8.34%
Fishing, Hunting, Trapping	27.50	50.00%	29.89	35.21%	29.89	26.04%
Hatchery/Enhancement	1.20	2.18%	1.20	1.41%	1.20	1.05%
Commercial Fishing	26.30	47.82%	28.70	33.81%	28.70	25.00%
Hunting/Trapping	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mining	0.00	0.00%	0.00	0.00%	0.00	0.00%
Construction	1.20	2.16%	1.20	1.41%	1.20	1.05%
Manufacturing	4.78	8.69%	5.98	7.04%	5.98	5.21%
Cannery	4.78	8.89%	5.98	7.04%	5.98	5.21%
Other Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Logging/Timber	0.00	0.00%	0.00	0.00%	0.00	0.00%
Transportation, Communications, and Utilities	3.59	6.53%	3.59	4.23%	3.59	3.13%
Trade	5.98	10.87%	5.98	7.04%	5.98	5.21%
Wholesale	0.00	0.00%	0.00	0.00%	0.00	0.00%
Retail	5.98	10.87%	5.98	7.04%	5.98	5.21%
Finance, Insurance, and Real Estate	8.37	15.22%	8.37	9.86%	8.37	7.29%
Services	21.52	39.13%	23.91	28.17%	25.11	21.88%
Government	17.93	32.60%	20.33	23.95%	20.33	17.71%
Federal	1.20	2.18%	1.20	1.41%	1.20	1.05%
State	7.17	13.04%	8.37	9.86%	8.37	7.29%
Local	9.57	17.40%	10.76	12.68%	10.76	9.37%
Local Government	4.78	8.69%	4.78	5.63%	4.78	4.16%
Local Education	4.78	8.69%	5.98	7.04%	5.98	5.21%
Unknown	4.78	8.69%	4.78	5.63%	4.78	4.16%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-4. Estimated Amount of Resources Removed From Commercial Harvest, Port Graham, 1990/91

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		4,704.97	14.19	13.42
Fish		4,704.97	15.29	13.42
Salmon	99.24	553.83	3.56	1.58
Coho Salmon	41.85	221.79	3.60	0.63
Chinook Salmon	27.50	272.25	10.36	0.78
Pink Salmon	29.89	59.78	1.74	0.17
Non-Salmon Fish		4,151.14	27.30	11.84
Cod	190.11	608.35	65.21	1.74
Pacific Cod (Gray)	190.11	608.35	75.36	1.74
Sablefish (Black Cod)	83.70	259.46	81.40	0.74
Greenling	1.20	1.20	0.66	0.00
Unknown Greenling	1.20	1.20	1.09	0.00
Halibut	141.65	3,002.96	29.21	8.57
Rockfish	68.15	257.66	34.73	0.74
Black Rockfish (black bass)	5.98	8.97	1.87	0.03
Red Rockfish	62.17	248.70	94.55	0.71
Shark	2.39	21.52	100.00	0.06

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-5. Estimated Salmon Harvest by Gear Type, Port Graham, 1990/91

		Subsistence Methods								Removed from ommercial Catch		Rod and Reel		Any Method	
		Net		Seine		Other		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	2,271.74	41.30	0.00	0.00	0.00	0.00	2,271.74	41.30	99.24	1.80	1,819.78	33.09	4,190.76	76.20
	pounds	9,274.32	168.62	0.00	0.00	0.00	0.00	9,274.32	168.62	553.83	10.07	5,735.30	104.28	15,563.45	282.97
Chum Salmon	numbers	59.78	1.09	0.00	0.00	0.00	0.00	59.78	1.09	0.00	0.00	83.70	1.52	143.48	2.61
	pounds	394.57	7.17	0.00	0.00	0.00	0.00	394.57	7.17	0.00	0.00	552.39	10.04	946.96	17.22
Coho Salmon	numbers	591.85	10.76	0.00	0.00	0.00	0.00	591.85	10.76	41.85	0.76	527.28	9.59	1,160.98	21.11
	pounds	3,136.79	57.03	0.00	0.00	0.00	0.00	3,136.79	57.03	221.79	4.03	2,794.60	50.81	6,153.18	111.88
Chinook Salmon	numbers	236.74	4.30	0.00	0.00	0.00	0.00	236.74	4.30	27.50	0.50	1.20	0.02	265.43	4.83
	pounds	2,343.72	42.61	0.00	0.00	0.00	0.00	2,343.72	42.61	272.25	4.95	11.84	0.22	2,627.80	47.78
Pink Salmon	numbers	731.74	13.30	0.00	0.00	0.00	0.00	731.74	13.30	29.89	0.54	951.74	17.30	1,713.37	31.15
	pounds	1,463.48	26.61	0.00	0.00	0.00	0.00	1,463.48	26.61	59.78	1.09	1,903.48	34.61	3,426.74	62.30
Sockeye Salmon	numbers	639.67	11.63	0.00	0.00	0.00	0.00	639.67	11.63	0.00	0.00	71.74	1.30	711.41	12.93
	pounds	1,919.02	34.89	0.00	0.00	0.00	0.00	1,919.02	34.89	0.00	0.00	215.22	3.91	2,134.24	38.80
Spawnouts, Salmon	numbers	11.96	0.22	0.00	0.00	0.00	0.00	11.96	0.22	0.00	0.00	184.13	3.35	196.09	3.57
	pounds	16.74	0.30	0.00	0.00	0.00	0.00	16.74	0.30	0.00	0.00	257.78	4.69	274.52	4.99

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-6. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest Port Graham, 1990/91

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Other No.	Other Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
	total	54.21	59.59	0.00	0.00	0.00	0.00	54.21	59.59	2.37	3.56	43.42	36.85		
Chum Salmon	geartype	2.63	4.25	0.00	0.00	0.00	0.00	2.63	4.25	0.00	0.00	4.60	9.63	3.42	6.08
	resource	41.67	41.67	0.00	0.00	0.00	0.00	41.67	41.67	0.00	0.00	58.33	58.33		
	total	1.43	2.54	0.00	0.00	0.00	0.00	1.43	2.54	0.00	0.00	2.00	3.55		
Coho Salmon	geartype	26.05	33.82	0.00	0.00	0.00	0.00	26.05	33.82	42.17	40.05	28.98	48.73	27.70	39.54
	resource	50.98	50.98	0.00	0.00	0.00	0.00	50.98	50.98	3.60	3.60	45.42	45.42		
	total	14.12	20.15	0.00	0.00	0.00	0.00	14.12	20.15	1.00	1.43	12.58	17.96		
Chinook Salmon	geartype	10.42	25.27	0.00	0.00	0.00	0.00	10.42	25.27	27.71	49.16	0.07	0.21	6.33	16.88
	resource	89.19	89.19	0.00	0.00	0.00	0.00	89.19	89.19	10.36	10.36	0.45	0.45		
	total	5.65	15.06	0.00	0.00	0.00	0.00	5.65	15.06	0.66	1.75	0.03	0.08		
Pink Salmon	geartype	32.21	15.78	0.00	0.00	0.00	0.00	32.21	15.78	30.12	10.79	52.30	33.19	40.88	22.02
	resource	42.71	42.71	0.00	0.00	0.00	0.00	42.71	42.71	1.74	1.74	55.55	55.55		
	total	17.46	9.40	0.00	0.00	0.00	0.00	17.46	9.40	0.71	0.38	22.71	12.23		
Sockeye Salmon	geartype	28.16	20.69	0.00	0.00	0.00	0.00	28.16	20.69	0.00	0.00	3.94	3.75	16.98	13.71
	resource	89.92	89.92	0.00	0.00	0.00	0.00	89.92	89.92	0.00	0.00	10.08	10.08		
	total	15.26	12.33	0.00	0.00	0.00	0.00	15.26	12.33	0.00	0.00	1.71	1.38		
Spawnouts, Salmon	geartype	0.53	0.18	0.00	0.00	0.00	0.00	0.53	0.18	0.00	0.00	10.12	4.49	4.68	1.76
	resource	6.10	6.10	0.00	0.00	0.00	0.00	6.10	6.10	0.00	0.00	93.90	93.90		
	total	0.29	0.11	0.00	0.00	0.00	0.00	0.29	0.11	0.00	0.00	4.39	1.66		

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-7. Percentage Households Harvesting Salmon By Gear Type and Species, Port Graham, 1990/91

Resource	Subsistence Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Other	Any Subsistence Gear			
Salmon	65.22	0.00	0.00	65.22	8.70	73.91	89.13
Chum Salmon	19.57	0.00	0.00	19.57	0.00	26.09	41.30
Coho Salmon	41.30	0.00	0.00	41.30	4.35	50.00	63.04
Chinook Salmon	43.48	0.00	0.00	43.48	6.52	2.17	45.65
Pink Salmon	34.78	0.00	0.00	34.78	2.17	50.00	67.39
Sockeye Salmon	34.78	0.00	0.00	34.78	0.00	10.87	39.13
Spawnouts, Salmon	2.17	0.00	0.00	2.17	0.00	28.26	28.26

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-8. Estimated Harvest of Fish Other Than Salmon By Gear Type, Port Graham, 1990/91

	Harvest Units	Subsistence Gear		From Commercial Catch		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	5,657.28	102.86	4,151.14	75.48	5,396.82	98.12	15,205.24	276.46
Lingcod	pounds	52.61	0.96	0.00	0.00	19.13	0.35	71.74	1.30
Pacific Tom Cod	pounds	125.54	2.28	0.00	0.00	0.00	0.00	125.54	2.28
Pacific Cod (Gray)	pounds	45.91	0.83	608.35	11.06	153.04	2.78	807.30	14.68
Sablefish (Black Cod)	pounds	0.00	0.00	259.46	4.72	59.30	1.08	318.76	5.80
Flounder	pounds	322.83	5.87	0.00	0.00	272.61	4.96	595.43	10.83
Sole	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	pounds	3,170.51	57.65	3,002.96	54.60	4,106.35	74.66	10,279.81	186.91
Herring	pounds	258.26	4.70	0.00	0.00	0.00	0.00	258.26	4.70
Herring Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roe on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	pounds	0.00	0.00	8.97	0.16	469.89	8.54	478.86	8.71
Red Rockfish	pounds	0.00	0.00	248.70	4.52	14.35	0.26	263.04	4.78
Irish Lord	pounds	2.39	0.04	0.00	0.00	0.00	0.00	2.39	0.04
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	20.92	0.38	20.92	0.38
Eulachon (Hooligan, Candlefish)	pounds	30.43	0.55	0.00	0.00	0.00	0.00	30.43	0.55
Unknown Smelt	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	pounds	0.00	0.00	1.20	0.02	108.80	1.98	110.00	2.00
Groundfish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolf Eel (Wolffish)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shark	pounds	0.00	0.00	21.52	0.39	0.00	0.00	21.52	0.39
Walleye Pollock (Whiting)	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	1,633.74	29.70	0.00	0.00	154.00	2.80	1,787.74	32.50
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	16.74	0.30	16.74	0.30
Steelhead	pounds	15.07	0.27	0.00	0.00	1.67	0.03	16.74	0.30
Unknown Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-9. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Port Graham, 1990/91

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Any Method
Non-Salmon Fish	52.17	19.57	56.52	78.26
Lingcod	4.35	0.00	2.17	6.52
Pacific Tom Cod	6.52	0.00	0.00	6.52
Pacific Cod (Gray)	2.17	10.87	17.39	26.09
Sablefish (Black Cod)	0.00	2.17	6.52	8.70
Flounder	8.70	0.00	15.22	23.91
Sole	0.00	0.00	0.00	0.00
Halibut	36.96	13.04	26.09	58.70
Herring	2.17	0.00	0.00	2.17
Herring Roe	0.00	0.00	0.00	0.00
Roe on Kelp	0.00	0.00	0.00	0.00
Sac Roe	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	0.00	2.17	15.22	17.39
Red Rockfish	0.00	10.87	2.17	13.04
Irish Lord	2.17	0.00	0.00	2.17
Unknown Sculpin	0.00	0.00	6.52	6.52
Eulachon (Hooligan, Candlefish)	4.35	0.00	0.00	4.35
Unknown Smelt	0.00	0.00	0.00	0.00
Unknown Greenling	0.00	2.17	8.70	10.87
Groundfish	0.00	0.00	0.00	0.00
Wolf Eel (Wolffish)	0.00	0.00	0.00	0.00
Shark	0.00	2.17	0.00	2.17
Walleye Pollock (Whiting)	0.00	0.00	0.00	0.00
Dolly Varden	32.61	0.00	23.91	50.00
Rainbow Trout	0.00	0.00	2.17	2.17
Steelhead	2.17	0.00	2.17	4.35
Unknown Trout	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table F-10. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Port Graham, 1990/91

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.
Non-Salmon Fish	resource	37.21	27.30	35.49
Lingcod	resource	73.33	0.00	26.67
Pacific Tom Cod	resource	100.00	0.00	0
Pacific Cod (Gray)	resource	5.69	75.36	18.96
Sablefish (Black Cod)	resource	0.00	81.40	18.6
Flounder	resource	54.22	0.00	45.78
Sole	resource	0.00	0.00	0
Halibut	resource	30.84	29.21	39.95
Herring	resource	100.00	0.00	0
Herring Roe	resource	0.00	0.00	0
Roe on Kelp	resource	0.00	0.00	0
Sac Roe	resource	0.00	0.00	0
Black Rockfish (black bass)	resource	0.00	1.87	98.13
Red Rockfish	resource	0.00	94.55	5.45
Irish Lord	resource	100.00	0.00	0
Unknown Sculpin	resource	0.00	0.00	100
Eulachon (Hooligan, Candlefish)	resource	100.00	0.00	0
Unknown Smelt	resource	0.00	0.00	0
Unknown Greenling	resource	0.00	1.09	98.91
Groundfish	resource	0.00	0.00	0
Wolf Eel (Wolffish)	resource	0.00	0.00	0
Shark	resource	0.00	100.00	0
Walleye Pollock (Whiting)	resource	0.00	0.00	0
Dolly Varden	resource	91.39	0.00	8.61
Rainbow Trout	resource	0.00	0.00	100
Steelhead	resource	90.00	0.00	10
Unknown Trout	resource	0.00	0.00	0

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

APPENDIX G: SUPPLEMENTAL TABLES, OUZINKIE

Table G-1. Community, Household, and Per Capita Incomes, All Sources and by Employer Types, Ouzinkie, 1990/91

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$2,126,836.81	$36,048.08	$10,497.52
Earned Income	$1,348,859.64	$22,862.03	$6,657.62
Agriculture, Forestry, and Fishing	510,070.67	8645.27	2,517.58
Agriculture	0.00	0.00	0.00
Forestry	43,882.64	743.77	216.59
Fishing, Hunting, Trapping	466,188.03	7,901.49	2,300.98
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	466,188.03	7,901.49	2,300.98
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	6.579.06	111.51	32.47
Manufacturing	6,679.25	113.21	32.97
Cannery	6,679.25	113.21	32.97
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	61,449.06	1,041.51	303.30
Trade	47,123.41	798.70	232.59
Wholesale	0.00	0.00	0.00
Retail	47,123.41	798.70	232.59
Finance, Insurance, and Real Estate	107,647.17	1,824.53	531.32
Services	194,912.52	3,303.60	962.04
Government	414,398.51	7,023.70	2,045.36
Federal	75,698.11	1,283.02	373.63
State	612.26	10.38	3.02
Local	338,088.13	5,730.31	1,668.72
Local Government	122.312.88	2,073.10	603.70
Local Education	215,775.25	3,657.21	1965.01
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$777.977.1a	$13,186.05	$3,839.89

OURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-2. Community, Household, and Per Capita Other Income by Source, Ouzinkie, 1990/91

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
Il Sources		$777,977.18	$13,186.05	$3,839.89
Exxon Claims	16.98	79,807.00	1,352.66	393.91
Aid to Families with Dependent Children	5.66	11.260.09	190.85	55.58
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	3.77	5,120.75	86.79	25.27
Longevity Bonus	13.21	27,273.58	462.26	134.62
Social Security	20.75	48,797.02	827.07	240.85
Workman's Comp./Insurance	1.a9	2,938.87	49.81	14.51
Energy Assistance	41.51	11,211.87	190.03	55.34
Supplemental Security Income	3.77	4,862.49	82.42	24.00
Food Stamps	3.77	3,505.49	59.42	17.30
Unemployment	15.09	12,957.74	219.62	63.96
Native Corporation Dividend	86.79	355,544.86	6,026.18	1,754.88
Dividend/Interest	15.09	8,706.52	147.57	42.97
Child Support	5.66	12,984.45	220.08	64.09
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	100.00	193,006.43	3,271.30	952.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-3. Employment by Industry Category, Ouzinkie, 1990/91

INCOME SOURCE	Employment					
	Households (n= 59)		Employed Adults (n= 100.19		Jobs (n=182.57)	
	Number	Percentage	Number	Percentage	Number	Percentage
Agriculture, Forestry, and Fishing	44.53	75.47%	61.23	61.11%	77.92	42.68%
Agriculture	0.00	0.00%	0.00	0.00%	0.00	0.00%
Forestry	10.02	16.98%	10.02	10.00%	10.02	5.49%
Fishing, Hunting, Trapping	34.51	58.49%	51.21	51.11%	67.91	37.20%
Hatchery/Enhancement	0.00	0.00%	0.00	0.00%	0.00	0.00%
Commercial Fishing	34.51	58.49%	51.21	51.11%	67.91	37.20%
Hunting/Trapping	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mining	0.00	0.00%	0.00	0.00%	0.00	0.00%
Construction	3.34	5.66%	3.34	3.33%	3.34	1.83%
Manufacturing	2.23	3.78%	2.23	2.23%	2.23	1.22%
Cannery	2.23	3.78%	2.23	2.23%	2.23	1.22%
Other Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Logging/Timber	0.00	0.00%	0.00	0.00%	0.00	0.00%
Transportation, Communications, and Utilities	8.91	15.10%	10.02	10.00%	10.02	5.49%
Trade	8.88	11.32%	7.79	7.78%	7.79	4.27%
Wholesale	0.00	0.00%	0.00	0.00%	0.00	0.00%
Retail	8.68	11.32%	7.79	7.78%	7.79	4.27%
Finance, Insurance, and Real Estate	6.68	11.32%	7.79	7.78%	7.79	4.27%
Services	16.70	28.31%	20.04	20.00%	21.15	11.58%
Government	34.51	58.49%	43.42	43.34%	47.87	26.22%
Federal	4.45	7.54%	4.45	4.44%	4.45	2.44%
State	2.23	3.78%	2.23	2.23%	2.23	1.22%
Local	27.83	47.17%	36.74	36.67%	41.19	22.56%
Local Government	17.81	30.19%	22.26	22.22%	23.38	12.81%
Local Education	10.02	16.98%	14.47	14.44%	17.81	9.76%
Unknown	4.45	7.54%	4.45	4.44%	4.45	2.44%

OURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-4. Estimated Amount of Resources Removed From Commercial Harvests, Ouzinkie, 1990/91

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		10,350.57	32.41	24.89
Fish		10,170.90	34.93	24.46
Salmon	949.01	4,235.60	27.69	10.19
Chum Salmon	57.89	329.38	23.53	0.79
Coho Salmon	306.13	1,882.71	25.25	4.53
Chinook Salmon	6.12	53.76	25.58	0.13
Pink Salmon	169.21	392.56	40.86	0.94
Sockeye Salmon	409.66	1,577.19	30.77	3.79
Non-Salmon Fish		5,935.30	42.96	14.27
Cod	122.45	391.85	40.82	0.94
Pacific Cod (Gray)	122.45	391.85	40.82	0.94
Greenling	16.70	66.79	36.36	0.16
Lingcod	16.70	66.79	45.45	0.16
Halibut	143.06	5,164.40	51.75	12.42
Rockfish	96.85	312.25	24.68	0.75
Black Rockfish (black bass)	30.06	45.08	6.32	0.11
Red Rockfish	66.79	267.17	48.39	0.64
Marine Invertebrates		179.67	6.36	0.43
Crabs	126.91	152.95	21.69	0.37
Dungeness Crab	55.66	38.96	45.87	0.09
Tanner Crab	71.25	113.99	24.43	0.27
Octopus	6.68	26.72	11.65	0.06

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-5. Estimated Salmon Harvest by Gear Type, Ouzinkie, 1990/91

		Subsistence Methods								Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Other		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	1,803.40	30.57	50.09	0.85	239.34	4.06	2,092.83	35.47	949.01	16.08	219.30	3.72	3,261.14	55.27
	pounds	8,537.04	144.70	227.55	3.86	1,173.48	19.89	9,938.07	168.44	4,235.60	71.79	1,125.09	19.07	15,298.76	259.30
Chum Salmon	numbers	131.36	2.23	26.72	0.45	27.83	0.47	185.91	3.15	57.89	0.98	2.23	0.04	246.02	4.17
	pounds	747.43	12.67	152.02	2.58	158.35	2.68	1,057.80	17.93	329.38	5.58	12.67	0.21	1,399.85	23.73
Coho Salmon	numbers	616.72	10.45	1.11	0.02	136.92	2.32	754.75	12.79	306.13	5.19	151.40	2.57	1,212.28	20.55
	pounds	3,792.81	64.28	6.85	0.12	842.09	14.27	4,641.74	78.67	1,882.71	31.91	931.09	15.78	7,455.54	126.37
Chinook Salmon	numbers	17.81	0.30	0.00	0.00	0.00	0.00	17.81	0.30	6.12	0.10	0.00	0.00	23.93	0.41
	pounds	156.38	2.65	0.00	0.00	0.00	0.00	156.38	2.65	53.76	0.91	0.00	0.00	210.14	3.56
Pink Salmon	numbers	112.43	1.91	11.13	0.19	74.58	1.26	198.15	3.36	169.21	2.87	46.75	0.79	414.11	7.02
	pounds	260.85	4.42	25.83	0.44	173.04	2.93	459.71	7.79	392.56	6.65	108.47	1.84	960.74	16.28
Sockeye Salmon	numbers	891.68	15.11	11.13	0.19	0.00	0.00	902.81	15.30	409.66	6.94	18.92	0.32	1,331.40	22.57
	pounds	3,432.97	58.19	42.86	0.73	0.00	0.00	3,475.82	58.91	1,577.19	26.73	72.86	1.23	5,125.88	86.88
Unknown Salmon	numbers	33.40	0.57	0.00	0.00	0.00	0.00	33.40	0.57	0.00	0.00	0.00	0.00	33.40	0.57
	pounds	146.61	2.48	0.00	0.00	0.00	0.00	146.61	2.48	0.00	0.00	0.00	0.00	146.61	2.48

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-6. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Ouzinkie, 1990/91

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Other No.	Other Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
	total	55.30	55.80	1.54	1.49	7.34	7.67	64.17	64.96	29.10	27.69	6.72	7.35		
Chum Salmon	geartype	7.28	8.76	53.33	66.81	11.63	13.49	8.88	10.64	6.10	7.78	1.02	1.13	7.54	9.15
	resource	53.39	53.39	10.86	10.86	11.31	11.31	75.57	75.57	23.53	23.53	0.90	0.90		
	total	4.03	4.89	0.82	0.99	0.85	1.04	5.70	6.91	1.78	2.15	0.07	0.08		
Coho Salmon	geartype	34.20	44.43	2.22	3.01	57.21	71.76	36.06	46.71	32.26	44.45	69.04	82.76	37.17	48.73
	resource	50.87	50.87	0.09	0.09	11.29	11.29	62.26	62.26	25.25	25.25	12.49	12.49		
	total	18.91	24.79	0.03	0.04	4.20	5.50	23.14	30.34	9.39	12.31	4.64	6.09		
Chinook Salmon	geartype	0.99	1.83	0.00	0.00	0.00	0.00	0.85	1.57	0.65	1.27	0.00	0.00	0.73	1.37
	resource	74.42	74.42	0.00	0.00	0.00	0.00	74.42	74.42	25.58	25.58	0.00	0.00		
	total	0.55	1.02	0.00	0.00	0.00	0.00	0.55	1.02	0.19	0.35	0.00	0.00		
Pink Salmon	geartype	6.23	3.06	22.22	11.35	31.16	14.75	9.47	4.63	17.83	9.27	21.32	9.64	12.70	6.28
	resource	27.15	27.15	2.69	2.69	18.01	18.01	47.85	47.85	40.86	40.86	11.29	11.29		
	total	3.45	1.71	0.34	0.17	2.29	1.13	6.08	3.00	5.19	2.57	1.43	0.71		
Sockeye Salmon	geartype	49.44	40.21	22.22	18.83	0.00	0.00	43.14	34.97	43.17	37.24	8.63	6.48	40.83	33.51
	resource	66.97	66.97	0.84	0.84	0.00	0.00	67.81	67.81	30.77	30.77	1.42	1.42		
	total	27.34	22.44	0.34	0.28	0.00	0.00	27.68	22.72	12.56	10.31	0.58	0.48		
Unknown Salmon	geartype	1.85	1.72	0.00	0.00	0.00	0.00	1.60	1.48	0.00	0.00	0.00	0.00	1.02	0.96
	resource	100.00	100.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	1.02	0.96	0.00	0.00	0.00	0.00	1.02	0.96	0.00	0.00	0.00	0.00		

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-7. Percentage of Households Harvesting Salmon By Gear Type and Species, Ouzinkie, 1990/91

Resource	Subsistence Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Other	Any Subsistence Gear			
Salmon	45.28	1.89	11.32	56.60	39.62	32.08	75.47
Chum Salmon	16.98	1.89	1.89	18.87	11.32	1.89	28.30
Coho Salmon	24.53	1.89	11.32	35.85	26.42	22.64	64.15
Chinook Salmon	5.66	0.00	0.00	5.66	5.66	0.00	11.32
Pink Salmon	11.32	1.89	3.77	16.98	15.09	11.32	43.40
Sockeye Salmon	37.74	1.89	0.00	39.62	33.96	5.66	56.60
Unknown Salmon	1.89	0.00	0.00	1.89	0.00	0.00	1.89

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-8. Estimated Harvest of Fish Other Than Salmon By Gear Type, Ouzinkie, 1990/91

	Harvest Units	Subsistence Gear		From Commercial Catch		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	3,317.69	56.23	5,935.30	100.60	4,562.80	77.34	13,815.79	234.17
Grayling	pounds	0.00	0.00	0.00	0.00	1.56	0.03	1.56	0.03
Lingcod	pounds	66.79	1.13	66.79	1.13	13.36	0.23	146.94	2.49
Pacific Cod (Gray)	pounds	297.45	5.04	391.85	6.64	270.73	4.59	960.03	16.27
Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	pounds	2,595.66	43.99	5,164.40	87.53	2,219.11	37.61	9,979.18	169.14
Herring	pounds	90.17	1.53	0.00	0.00	0.00	0.00	90.17	1.53
Black Rockfish (black bass)	pounds	25.05	0.42	45.08	0.76	642.88	10.90	713.01	12.08
Red Rockfish	pounds	173.66	2.94	267.17	4.53	111.32	1.89	552.15	9.36
Unknown Rockfish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irish Lord	pounds	7.24	0.12	0.00	0.00	0.00	0.00	7.24	0.12
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	pounds	5.57	0.09	0.00	0.00	31.17	0.53	36.74	0.62
Skates	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	56.11	0.95	0.00	0.00	862.78	14.62	918.89	15.57
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	394.30	6.68	394.30	6.68
Steelhead	pounds	0.00	0.00	0.00	0.00	15.58	0.26	15.58	0.26

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-9. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Ouzinkie, 1990/9

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.
Non-Salmon Fish	resource	24.01	42.96	33.03
Grayling	resource	0.00	0.00	100
Lingcod	resource	45.45	45.45	9.09
Pacific Cod (Gray)	resource	30.98	40.82	28.2
Flounder	resource	0.00	0.00	0
Halibut	resource	26.01	51.75	22.24
Herring	resource	100.00	0.00	0
Black Rockfish (black bass)	resource	3.51	6.32	90.16
Red Rockfish	resource	31.45	48.39	20.16
Unknown Rockfish	resource	0.00	0.00	0
Irish Lord	resource	100.00	0.00	0
Unknown Sculpin	resource	0.00	0.00	0
Unknown Greenling	resource	15.15	0.00	84.85
Skates	resource	0.00	0.00	0
Dolly Varden	resource	6.11	0.00	93.89
Rainbow Trout	resource	0.00	0.00	100
Steelhead	resource	0.00	0.00	100

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table G-10. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Ouzinkie, 1990/91

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Any Method
Non-Salmon Fish	26.42	37.74	43.40	66.04
Grayling	0.00	0.00	1.89	1.89
Lingcod	1.89	3.77	3.77	9.43
Pacific Cod (Gray)	9.43	15.09	5.66	28.30
Flounder	0.00	0.00	0.00	0.00
Halibut	20.75	26.42	9.43	39.62
Herring	3.77	0.00	0.00	3.77
Black Rockfish (black bass)	1.89	5.66	13.21	20.75
Red Rockfish	3.77	13.21	1.89	16.98
Unknown Rockfish	0.00	0.00	0.00	0.00
Irish Lord	3.77	0.00	0.00	3.77
Unknown Sculpin	0.00	0.00	0.00	0.00
Unknown Greenling	1.89	0.00	5.66	7.55
Skates	0.00	0.00	0.00	0.00
Dolly Varden	3.77	0.00	30.19	33.96
Rainbow Trout	0.00	0.00	18.87	18.87
Steelhead	0.00	0.00	1.89	1.89

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

APPENDIX H: SUPPLEMENTAL TABLES, LARSEN BAY

Table H-1. Community, Household, and Per Capita Incomes, All Sources and by Employer Types, Larsen Bay, 1990/91

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$1,426,082.38	$35,652.06	$9,825.37
Earned Income	$1,015,122.54	$25,378.06	$6,993.95
Agriculture, Forestry, and Fishing	405.261.37	10.131.53	2,792.16
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	405,261.37	10,131.53	2,792.16
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	405,261.37	10,131.53	2,792.16
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	AMT UNK	AMT UNK	AMT UNK
Manufacturing	159428.57	385.7 1	106.30
Cannery	15,428.57	385.71	106.30
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	6,342.86	158.57	43.70
Trade	24,914.29	622.86	171.65
Wholesale	0.00	0.00	0.00
Retail	24,914.29	622.86	171.65
Finance, Insurance, and Real Estate	0.00	0.00	0.00
Services	102,082.54	2,552.06	703.32
Government	447,378.63	11.184.47	3,082.33
Federal	37,714.29	942.86	259.84
State	240.00	6.00	1.65
Local	409,424.34	10,235.61	2.82064
Local Government	234,681.49	5,867.04	1,616.90
Local Education	174,742.86	4,368.57	1,203.94
Unknown	13,714.29	342.86	94.49
Other Income	$410,959.84	$10,274.00	$2,831.42

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-2. Community, Household, and Per Capita Other Income by Source, Larsen Bay, 1990/91

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$410,959.84	$10,274.00	$2,831.42
Exxon Claims	20.00	35,373.33	884.33	243.71
Aid to Families with Dependent Children	8.57	33,874.29	846.86	233.39
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	2.86	6,857.14	171.43	47.24
Pension/Retirement	5.71	2,400.00	60.00	16.54
Longevity Bonus	14.29	20,914.29	522.86	144.09
Social Security	22.86	70.022.86	1,750.57	482.44
Workman's Comp./Insurance	2.86	57.14	1.43	0.39
Energy Assistance	51.43	10,152.00	253.80	69.94
Supplemental Security Income	2.86	548.57	13.71	3.78
Food Stamps	14.29	17,558.86	438.97	120.98
Unemployment	20.00	22,784.00	569.60	156.98
Native Corporation Dividend	65.71	11,991.06	299.78	82.62
Dividend/Interest	17.14	22,594.29	564.86	155.67
Child Support	11.43	17564.57	439.11	121.02
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	100.00	138,267.44	3,456.69	952.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-3. Employment by Industry Category, Larsen Bay, 1990/91

INCOME SOURCE	Households (n= 40)		Employment: Employed Adults (n= 75.43)		Jobs (n=148.57)	
	Number	Percentage	Number	Percentage	Number	Percentage
Agriculture, Forestry, and Fishing	25.14	62.85%	34.29	45.46%	51.43	34.62%
Agriculture	0.00	0.00%	0.00	0.00%	0.00	0.00%
Forestry	0.00	0.00%	0.00	0.00%	0.00	0.00%
Fishing, Hunting, Trapping	25.14	62.85%	34.29	45.46%	51.43	34.62%
Hatchery/Enhancement	0.00	0.00%	0.00	0.00%	0.00	0.00%
Commercial Fishing	25.14	62.85%	34.29	45.46%	51.43	34.62%
Hunting/Trapping	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mining	0.00	0.00%	0.00	0.00%	0.00	0.00%
Construction	1.14	2.85%	1.14	1.51%	1.14	0.77%
Manufacturing	1.14	2.85%	1.14	1.51%	1.14	0.77%
Cannery	1.14	2.85%	1.14	1.51%	1.14	0.77%
Other Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Logging/Timber	0.00	0.00%	0.00	0.00%	0.00	0.00%
Transportation, Communications. and Utilities	3.43	8.58%	4.57	6.06%	4.57	3.08%
Trade	3.43	8.58%	5.71	7.57%	5.71	3.84%
Wholesale	0.00	0.00%	0.00	0.00%	0.00	0.00%
Retail	3.43	8.58%	5.71	7.57%	5.71	3.84%
Finance, Insurance. and Real Estate	0.00	0.00%	0.00	0.00%	0.00	0.00%
Services	11.43	28.58%	13.71	18.18%	14.86	10.00%
Government	36.57	91.43%	52.57	69.69%	65.14	43.84%
Federal	1.14	2.85%	1.14	1.51%	1.14	0.77%
State	1.14	2.85%	1.14	1.51%	1.14	0.77%
Local	34.29	85.73%	50.29	66.67%	62.86	42.31%
Local Government	26.29	65.73%	40.00	53.03%	52.57	35.38%
Local Education	8.00	20.00%	10.29	13.64%	10.29	6.93%
Unknown	4.57	11.43%	4.57	6.06%	4.57	3.08%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-4. Estimated Amount of Resources Removed From Commercial Harvests, Larsen Bay, 1990/91

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		8,649.77	22.49	17.30
Fish		7,718.14	25.32	15.43
Salmon	748.57	3,572.79	23.47	7.14
Coho Salmon	176.00	1,082.40	23.19	2.16
Chinook Salmon	69.71	612.09	66.30	1.22
Pink Salmon	37.71	87.50	20.00	0.17
Sockeye Salmon	465.14	1,790.80	19.50	3.58
Non-Salmon Fish		4,145.35	27.16	8.29
Cod	57.14	182.86	8.26	0.37
Pacific Cod (Gray)	57.14	182.86	8.26	0.37
Flounder	22.86	68.57	26.32	0.14
Halibut	102.16	3,687.98	32.91	7.38
Rockfish	27.43	41.14	12.36	0.08
Black Rockfish (black bass)	27.43	41.14	14.91	0.08
Trout and Char	117.71	164.80	13.31	0.33
Char (general)	114.29	160.00	18.66	0.32
Dolly Varden	114.29	160.00	18.66	0.32
Trout	3.43	4.80	1.26	0.01
Steelhead	3.43	4.80	1.30	0.01
Marine Invertebrates		931.63	11.70	1.86
Crabs	570.63	906.49	65.87	1.81
Dungeness Crab	12.57	8.80	10.19	0.02
King Crab	6.86	15.77	5.04	0.03
Tanner Crab	551.20	881.92	90.27	1.76
Octopus	1.14	4.57	0.32	0.01
Sea Cucumber	10.29 gal	20.57	10.78	0.04

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-5. Estimated Salmon Harvest by Gear Type, Larsen Bay, 1990/91

		Subsistence Methods								Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Other		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	853.71	21.34	1,523.43	38.09	4.57	0.11	2,381.71	59.54	748.57	18.71	309.71	7.74	3,440.00	86.00
	pounds	3,657.50	91.44	6,504.46	162.61	10.61	0.27	10,172.56	254.31	3,572.79	89.32	1,478.07	36.95	5,223.42	380.59
Chum Salmon	numbers	0.∞-	0.∞-	0.∞	0.∞	0.∞	0.∞	0.∞	0.00	0.00	0.00	2.29	0.06	2.29	0.06
	pounds	0.∞	0.∞	0.∞	0.∞	0.∞	0.∞	0.∞	0.00	0.00	0.00	13.01	0.33	13.01	0.33
Coho Salmon	numbers	194.29	4.86	264.00	6.60	0.00	0.00	458.29	11.46	176.00	4.40	124.57	3.11	758.86	18.97
	pounds	1,194.86	29.87	1,623.60	40.59	0.00	0.00	2,818.46	70.46	1,082.40	27.06	766.11	19.15	4,666.97	116.67
Chinook Salmon	numbers	2.29	0.06	6.86	0.17	0.00	0.00	9.14	0.23	69.71	1.74	26.29	0.66	105.14	2.63
	pounds	20.07	0.50	60.21	1.51	0.00	0.00	80.27	2.01	612.09	15.30	230.79	5.77	923.15	23.08
Pink Salmon	numbers	57.14	1.43	1.14	0.03	4.57	0.11	62.86	1.57	37.71	0.94	88.00	2.20	188.57	4.71
	pounds	132.57	3.31	2.65	0.07	10.61	0.27	145.83	3.65	87.50	2.19	204.16	5.10	437.49	10.94
Sockeye Salmon	numbers	600.00	15.00	1,251.43	31.29	0.∞	0.∞	1,851.43	46.29	465.14	11.63	68.57	1.71	2,385.14	59.63
	pounds	2,310.00	57.75	4,818.00	120.45	0.∞	0.∞	7,128.00	178.20	1,790.80	44.77	264.00	6.60	9,182.80	229.57
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.∞	0.∞	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.∞	0.∞	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-6. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Larsen Bay, 1990/91

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Other No.	Other Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
	total	24.82	24.03	44.29	42.73	0.13	0.07	69.24	66.82	21.76	23.47	9.00	9.71		
Chum Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.88	0.07	0.09
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.09		
Coho Salmon	geartype	22.76	32.67	17.33	24.96	0.00	0.00	19.24	27.71	23.51	30.30	40.22	51.83	22.06	30.66
	resource	25.60	25.60	34.79	34.79	0.00	0.00	60.39	60.39	23.19	23.19	16.42	16.42		
	total	5.65	7.85	7.67	10.67	0.00	0.00	13.32	18.51	5.12	7.11	3.62	5.03		
Chinook Salmon	geartype	0.27	0.55	0.45	0.93	0.00	0.00	0.38	0.79	9.31	17.13	8.49	15.61	3.06	6.06
	resource	2.17	2.17	6.52	6.52	0.00	0.00	8.70	8.70	66.30	66.30	25.00	25.00		
	total	0.07	0.13	0.20	0.40	0.00	0.00	0.27	0.53	2.03	4.02	0.76	1.52		
Pink Salmon	geartype	6.69	3.62	0.08	0.04	100.00	100.00	2.64	1.43	5.04	2.45	28.41	13.81	5.48	2.87
	resource	30.30	30.30	0.61	0.61	2.42	2.42	33.33	33.33	20.00	20.00	46.67	46.67		
	total	1.66	0.87	0.03	0.02	0.13	0.07	1.83	0.96	1.10	0.57	2.56	1.34		
Sockeye Salmon	geartype	70.28	63.16	82.15	74.07	0.00	0.00	77.74	70.07	62.14	50.12	22.14	17.86	69.34	60.32
	resource	25.16	25.16	52.47	52.47	0.00	0.00	77.62	77.62	19.50	19.50	2.87	2.87		
	total	17.44	15.17	36.38	31.65	0.00	0.00	53.82	46.82	13.52	11.76	1.99	1.73		
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-7. Percentage Households Harvesting Salmon By Gear Type and Species, Larsen Bay, 1990/91

Resource	Subsistence Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Other	Any Subsistence Gear			
Salmon	11.43	25.71	2.86	40.00	51.43	25.71	68.57
Chum Salmon	0.∞	0.∞	0.∞	0.00	0.00	2.86	2.86
Coho Salmon	5.71	14.29	0.00	20.00	28.57	20.00	51.43
Chinook Salmon	2.86	5.71	0.00	8.57	8.57	14.29	28.57
Pink Salmon	2.86	2.86	2.86	8.57	14.29	14.29	31.43
Sockeye Salmon	11.43	22.86	0.00	34.29	48.57	11.43	65.71
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-8. Estimated Harvest of Fish Other Than Salmon By Gear Type, Larsen Bay, 1990/91

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	3,088.26	77.21	4,145.35	103.63	8,030.79	200.77	15,264.40	381.61
Grayling	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	pounds	9.14	0.23	0.00	0.00	0.00	0.00	9.14	0.23
Pacific Cod (Gray)	pounds	1,210.51	30.26	182.86	4.57	819.20	20.48	2,212.57	55.31
Flounder	pounds	68.57	1.71	68.57	1.71	123.43	3.09	260.57	6.51
Halibut	pounds	1,415.12	35.38	3,687.98	92.20	6,101.93	52.55	11,205.03	280.13
Herring	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	pounds	1.71	0.04	41.14	1.03	233.14	5.83	276.00	6.90
Red Rockfish	pounds	9.14	0.23	0.00	0.00	36.57	0.91	45.71	1.14
Unknown Rockfish	pounds	0.00	0.00	0.00	0.00	11.26	0.28	11.26	0.28
Irish Lord	pounds	2.86	0.07	0.00	0.00	2.86	0.07	5.71	0.14
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skates	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	368.00	9.20	160.00	4.00	329.60	8.24	857.60	21.44
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	12.80	0.32	12.80	0.32
Steelhead	pounds	3.20	0.08	4.80	0.12	360.00	9.00	368.00	9.20

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table H-9. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Larsen Bay 1990/91

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.
Non-Salmon Fish	resource	20.23	27.16	52.61
Grayling	resource	0.00	0.00	0
Lingcod	resource	100.00	0.00	0
Pacific Cod (Gray)	resource	54.71	8.26	37.02
Flounder	resource	26.32	26.32	47.37
Halibut	resource	12.63	32.91	54.46
Herring	resource	0.00	0.00	0
Black Rockfish (black bass)	resource	0.62	14.91	84.47
Red Rockfish	resource	20.00	0.00	80
Unknown Rockfish	resource	0.00	0.00	100
Irish Lord	resource	50.00	0.00	50
Unknown Sculpin	resource	0.00	0.00	0
Unknown Greenling	resource	0.00	0.00	0
Skates	resource	0.00	0.00	0
Dolly Varden	resource	42.91	18.66	38.43
Rainbow Trout	resource	0.00	0.00	100
Steelhead	resource	0.87	1.30	97.83

Alaska Department of Fish and Game, of Subsistence, Survey, 1991

Table H-10. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Larsen Bay, 1990/91

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Any Method
Non-Salmon Fish	34.29	31.43	60.00	65.71
Grayling	0.00	0.00	0.00	0.00
Lingcod	2.86	0.00	0.00	2.86
Pacific Cod (Gray)	20.00	2.86	17.14	31.43
Flounder	5.71	2.86	8.57	11.43
Halibut	22.86	25.71	31.43	54.29
Herring	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	2.86	2.86	14.29	17.14
Red Rockfish	2.86	0.00	5.71	8.57
Unknown Rockfish	0.00	0.00	2.86	2.86
Irish Lord	2.86	0.00	2.86	2.86
Unknown Sculpin	0.00	0.00	0.00	0.00
Unknown Greenling	0.00	0.00	0.00	0.00
Skates	0.00	0.00	0.00	0.00
Dolly Varden	8.57	2.86	31.43	37.14
Rainbow Trout	0.00	0.00	8.57	8.57
Steelhead	2.86	5.71	28.57	34.29

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

APPENDIX I: SUPPLEMENTAL TABLES, KARLUK

Table I-1. Community, Household, and Per Capita Incomes, All Sources and by Employer Types, Karluk, 1990/91

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$658,563.82	$34,661.25	$7,962.72
Earned Income	$486,528.90	$25,606.78	$5,882.64
Agriculture, Forestry, and Fishing	112,772.82	5,935.41	1,363.54
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	112,772.82	5,935.41	1,363.54
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	112,772.82	5,935.41	1,363.54
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation. Communications, and Utilities	92,988.24	4,894.12	1,124.32
Trade	10,058.82	529.41	121.62
Wholesale	0.00	0.00	0.00
Retail	10,058.82	529.41	121.62
Finance, Insurance, and Real Estate	0.00	0.00	0.00
Services	88,085.49	4,636.08	1,065.05
Government	182,623.53	9,611.76	2,208.11
Federal	AMT UNK	AMT UNK	AMT UNK
State	0.00	0.00	0.00
Local	182,623.53	9,611.76	2,208.11
Local Government	58,117.65	3,058.82	702.70
Local Education	124,505.88	6,552.94	1,505.41
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$172,034.92	$9.05447	$2,080.08

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-2. Community, Household, and Per Capita Other Income by Source, Karluk, 1990/91

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$172,034.92	$9,054.47	$2,080.08
Exxon Claims	11.76	1,106.47	58.24	13.38
Aid to Families with Dependent Children	11.76	18,146.12	955.06	219.41
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	5.88	AMT UNK	AMT UNK	AMT UNK
Longevity Bonus	11.76	6,705.88	352.94	81.08
Social Security	17.65	14645.65	770.82	177.08
Workman's Comp./Insurance	0.00	0.00	0.00	0.00
Energy Assistance	70.59	8,143.18	428.59	98.46
Supplemental Security Income	5.88	3,057.88	160.94	36.97
Food Stamps	29.41	26,151.82	1,376.41	316.20
Unemployment	17.65	3.263.53	171.76	39.46
Native Corporation Dividend	88.24	5,990.99	315.32	72.44
Dividend/interest	5.88	447.06	23.53	5.41
Child Support	5.88	5,588.24	294.12	67.57
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	100.00	78,788.10	4,146.74	952.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-3. Employment by Industry Category, Karluk, 1990/91

INCOME SOURCE	Employment					
	Households (n= 19)		Employed Adults (n= 34.65)		Jobs (n=45.82)	
	Number	Percentage	Number	Percentage	Number	Percentage
Agriculture, Forestry, and Fishing	4.47	23.53%	5.59	16.13%	6.71	14.64%
Agriculture	0.00	0.00%	0.00	0.00%	0.00	0.00%
Forestry	0.00	0.00%	0.00	0.00%	0.00	0.00%
Fishing, Hunting, Trapping	4.47	23.53%	5.59	16.13%	6.71	14.64%
Hatchery/Enhancement	0.00	0.00%	0.00	0.00%	0.00	0.00%
Commercial Fishing	4.47	23.53%	5.59	16.13%	6.71	14.64%
Hunting/Trapping	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mining	0.00	0.00%	0.00	0.00%	0.00	0.00%
Construction	0.00	0.00%	0.00	0.00%	0.00	0.00%
Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Cannery	0.00	0.00%	0.00	0.00%	0.00	0.00%
Other Manufacturing	0.00	0.00%	0.00	0.00%	0.00	0.00%
Logging/Timber	0.00	0.00%	0.00	0.00%	0.00	0.00%
Transportation, Communications, and Utilities	5.59	29.42%	5.59	16.13%	5.59	12.20%
Trade	1.12	5.89%	2.24	6.46%	2.24	4.89%
Wholesale	0.00	0.00%	0.00	0.00%	0.00	0.00%
Retail	1.12	5.89%	2.24	6.46%	2.24	4.89%
Finance, Insurance, and Real Estate	0.00	0.00%	0.00	0.00%	0.00	0.00%
Services	8.94	47.05%	10.06	29.03%	11.18	24.40%
Government	12.29	64.68%	13.41	38.70%	13.41	29.27%
Federal	1.12	5.89%	1.12	3.23%	1.12	2.44%
State	0.00	0.00%	0.00	0.00%	0.00	0.00%
Local	11.18	58.84%	12.29	35.47%	12.29	26.82%
Local Government	2.24	11.79%	3.35	9.67%	3.35	7.31%
Local Education	8.94	47.05%	8.94	25.80%	8.94	19.51%
Unknown	6.71	35.32%	6.71	19.37%	6.71	14.64%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-4. Estimated Amount of Resources Removed From Commercial Harvests, Karluk, 1990/91

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		1,887.37	6.40	5.68
Fish		1,887.37	6.64	5.68
Salmon	380.00	1,887.37	7.79	5.68
Chum Salmon	279.41	1,589.85	43.63	4.79
Coho Salmon	5.59	34.37	0.62	0.10
Pink Salmon	67.06	155.58	9.74	0.47
Sockeye Salmon	27.94	107.57	0.96	0.32

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-5. Estimated Salmon Harvest by Gear Type, Karluk, 1990/91

		Subsistence Methods								Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Other		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	1.12	0.06	4,722.06	248.53	0.00	0.00	4,723.18	248.59	380.00	20.00	292.82	15.41	5,396.00	284.00
	pounds	6.87	0.36	20,768.24	1,093.07	0.00	0.00	20,775.11	1,093.43	1,887.37	99.34	1,577.04	83.00	24,239.53	1,275.76
Chum Salmon	numbers	0.00	0.00	361.00	19.00	0.00	0.00	361.00	19.00	279.41	14.71	0.00	0.00	640.41	33.71
	pounds	0.00	0.00	2,054.09	108.11	0.00	0.00	2,054.09	108.11	1,589.85	83.68	0.00	0.00	3,643.94	191.79
Coho Salmon	numbers	1.12	0.06	805.82	42.41	0.00	0.00	806.94	42.47	5.59	0.29	83.82	4.41	896.35	47.18
	pounds	6.87	0.36	4,955.81	260.83	0.00	0.00	4,962.69	261.19	34.37	1.81	515.51	27.13	5,512.57	290.14
Chinook Salmon	numbers	0.00	0.00	177.71	9.35	0.00	0.00	177.71	9.35	0.00	0.00	81.59	4.29	259.29	13.65
	pounds	0.00	0.00	1,560.26	82.12	0.00	0.00	1,560.26	82.12	0.00	0.00	716.34	37.70	2,276.60	119.82
Pink Salmon	numbers	0.00	0.00	526.41	27.71	0.00	0.00	526.41	27.71	67.06	3.53	95.00	5.00	688.47	36.24
	pounds	0.00	0.00	1,221.28	64.28	0.00	0.00	1,221.28	64.28	155.58	8.19	220.40	11.60	1,597.25	84.07
Sockeye Salmon	numbers	0.00	0.00	2,851.12	150.06	0.00	0.00	2,851.12	150.06	27.94	1.47	32.41	1.71	2,911.47	153.24
	pounds	0.00	0.00	10,976.80	577.73	0.00	0.00	10,976.80	577.73	107.57	5.66	124.79	6.57	11,209.16	589.96
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-6. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Karluk, 1990/91

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Other No.	Other Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
	total	0.02	0.03	87.51	85.68	0.00	0.00	87.53	85.71	7.04	7.79	5.43	6.51		
Chum Salmon	geartype	0.00	0.00	7.64	9.89	0.00	0.00	7.64	9.89	73.53	84.24	0.00	0.00	11.87	15.03
	resource	0.00	0.00	56.37	56.37	0.00	0.00	56.37	56.37	43.63	43.63	0.00	0.00		
	total	0.00	0.00	6.69	8.47	0.00	0.00	6.69	8.47	5.18	6.56	0.00	0.00		
Coho Salmon	geartype	100.00	100.00	17.07	23.86	0.00	0.00	17.08	23.89	1.47	1.82	28.63	32.69	16.61	22.74
	resource	0.12	0.12	89.90	89.90	0.00	0.00	90.02	90.02	0.62	0.62	9.35	9.35		
	total	0.02	0.03	14.93	20.45	0.00	0.00	14.95	20.47	0.10	0.14	1.55	2.13		
Chinook Salmon	geartype	0.00	0.00	3.76	7.51	0.00	0.00	3.76	7.51	0.00	0.00	27.86	45.42	4.81	9.39
	resource	0.00	0.00	68.53	68.53	0.00	0.00	68.53	68.53	0.00	0.00	31.47	31.47		
	total	0.00	0.00	3.29	6.44	0.00	0.00	3.29	6.44	0.00	0.00	1.51	2.96		
Pink Salmon	geartype	0.00	0.00	11.15	5.88	0.00	0.00	11.15	5.88	17.65	8.24	32.44	13.98	12.76	6.59
	resource	0.00	0.00	76.46	76.46	0.00	0.00	76.46	76.46	9.74	9.74	13.80	13.80		
	total	0.00	0.00	9.76	5.04	0.00	0.00	9.76	5.04	1.24	0.64	1.76	0.91		
Sockeye Salmon	geartype	0.00	0.00	60.38	52.85	0.00	0.00	60.36	52.84	7.35	5.70	11.07	7.91	53.96	46.24
	resource	0.00	0.00	97.93	97.93	0.00	0.00	97.93	97.93	0.96	0.96	1.11	1.11		
	total	0.00	0.00	52.84	45.28	0.00	0.00	52.84	45.28	0.52	0.44	0.60	0.51		
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-7. Percentage of Households Harvesting Salmon By Gear Type and Species, Karluk, 1990/91

Resource	Subsistence Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Other	Any Subsistence Gear			
Salmon	5.88	82.35	0.00	82.35	5.88	52.94	88.24
Chum Salmon	0.00	23.53	0.00	23.53	5.88	0.00	23.53
Coho Salmon	5.88	41.18	0.00	47.06	5.88	29.41	70.59
Chinook Salmon	0.00	35.29	0.00	35.29	0.00	29.41	47.06
Pink Salmon	0.00	35.29	0.00	35.29	5.88	17.65	47.06
Sockeye Salmon	0.00	82.35	0.00	82.35	5.88	23.53	82.35
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-8. Estimated Harvest of Fish Other Than Salmon By Gear Type, Karluk, 1990/91

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	3,291.69	173.25	0.0	0.00	909.76	47.88	4,201.46	221.13
Grayling	pounds	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00
Lingcod	pounds	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00
Pacific Cod (Gray)	pounds	114.45	6.02	0.0	0.00	0.00	0.00	114.45	6.02
Flounder	pounds	375.53	19.76	0.0	0.00	0.00	0.00	375.53	19.76
Halibut	pounds	2,461.17	129.54	0.0	0.00	806.94	42.47	3,268.11	172.01
Herring	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	pounds	20.12	1.06	0.	0.00	0.00	0.00	20.12	1.06
Red Rockfish	pounds	17.88	0.94	0.	0.00	0.00	0.00	17.88	0.94
Unknown Rockfish	pounds	0.00	0.00	0.	0.00	0.00	0.00	0.00	0.00
Irish Lord	pounds	0.00	0.00	0.	0.00	1.12	0.06	1.12	0.06
Unknown Sculpin	pounds	8.38	0.44	0.	0.00	0.00	0.00	8.38	0.44
Unknown Greenling	pounds	0.00	0.00	0.	0.00	0.00	0.00	0.00	0.00
Skates	pounds	0.00	0.00	0.	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	256.61	13.51	0.	0.00	70.41	3.71	327.02	17.21
Rainbow Trout	pounds	4.69	0.25	0.	0.00	0.00	0.00	4.69	0.25
Steelhead	pounds	32.86	1.73	0.	0.00	31.29	1.65	64.15	3.38

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 991

Table I-9. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Karluk, 1990/91

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.
Non-Salmon Fish	resource	78.35	0.00	21.65
Grayling	resource	0.00	0.00	0
Lingcod	resource	0.00	0.00	0
Pacific Cod (Gray)	resource	100.00	0.00	0
Flounder	resource	100.00	0.00	0
Halibut	resource	75.31	0.00	24.69
Herring	resource	0.00	0.00	0
Black Rockfish (black bass)	resource	100.00	0.00	0
Red Rockfish	resource	100.00	0.00	0
Unknown Rockfish	resource	0.00	0.00	0
Irish Lord	resource	0.00	0.00	100
Unknown Sculpin	resource	100.00	0.00	0
Unknown Greenling	resource	0.00	0.00	0
Skates	resource	0.00	0.00	0
Dolly Varden	resource	78.47	0.00	21.53
Rainbow Trout	resource	100.00	0.00	0
Steelhead	resource	51.22	0.00	48.78

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

Table I-10. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Karluk, 1990/91

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Any Method
Non-Salmon Fish	58.82	0.00	23.53	64.71
Grayling	0.00	0.00	0.00	0.00
Lingcod	0.00	0.00	0.00	0.00
Pacific Cod (Gray)	11.76	0.00	0.00	11.76
Flounder	23.53	0.00	0.00	23.53
Halibut	52.94	0.00	5.88	52.94
Herring	0.00	0.00	0.00	0.00
Black Rockfish (black bass)	5.88	0.00	0.00	5.88
Red Rockfish	5.88	0.00	0.00	5.88
Unknown Rockfish	0.00	0.00	0.00	0.00
Irish Lord	0.00	0.00	5.88	5.88
Unknown Sculpin	5.88	0.00	0.00	5.88
Unknown Greenling	0.00	0.00	0.00	0.00
Skates	0.00	0.00	0.00	0.00
Dolly Varden	41.18	0.00	17.65	52.94
Rainbow Trout	5.88	0.00	0.00	5.88
Steelhead	17.65	0.00	5.88	17.65

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1991

APPENDIX J:

Households' Assessments of Changes in Subsistence Uses in 1990/91 Compared to the Previous Year (1989) and Reasons for these Changes, by Resource Category

Table J-1. Household Assessments of Change in Salmon Uses Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	1	5.9%	2	11.8%	0	0.0%	14	82.4%	2	14.3%	7	50.0%	5	35.7%
Chenega Bay	18	0	0.0%	1	5.6%	1	5.6%	16	88.9%	2	12.5%	4	25.0%	10	62.5%
Nanwalek	35	2	5.7%	0	0.0%	0	0.0%	33	94.3%	18	54.5%	7	21.2%	8	24.2%
Port Graham	46	1	2.2%	0	0.0%	0	0.0%	45	97.8%	23	51.1%	11	24.4%	11	24.4%
Ouzinkie	53	1	1.9%	2	3.8%	0	0.0%	50	94.3%	24	48.0%	14	28.0%	12	24.0%
Larsen Bay	35	0	0.0%	3	8.6%	1	2.9%	31	88.6%	11	35.5%	13	41.9%	7	22.6%
Karluk	17	0	0.0%	2	11.8%	1	5.9%	14	82.4%	4	28.6%	8	57.1%	2	14.3%
TOTAL	221	5	2.3%	10	4.5%	3	1.4%	203	91.9%	84	38.0%	64	29.0%	55	24.9%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-2. Reasons for Increased Harvest/Use of Salmon Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	1	2.2%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Ouzinkie	53	3	5.7%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	66.7%	1	33.3%	0	0.0%
Larsen Bay	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	4	1.8%	1	0.5%	1	0.5%	0	0.0%	0	0.0%	0	0.0%	3	1.4%	1	0.5%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, -991.

Table J-3. Reasons for Decreased Harvest/Use of Salmon Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	13	76.5%	3	23.1%	4	30.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	15.4%	0	0.0%
Chenega Bay	18	15	83.3%	8	53.3%	5	33.3%	0	0.0%	2	13.3%	0	0.0%	6	40.0%	7	46.7%	0	0.0%
Nanwalek	35	15	42.9%	3	20.0%	6	40.0%	0	0.0%	1	6.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	38	82.6%	10	26.3%	7	18.4%	0	0.0%	5	13.2%	1	2.6%	3	7.9%	5	13.2%	0	0.0%
Ouzinkie	53	17	32.1%	7	41.2%	4	23.5%	1	5.9%	1	5.9%	0	0.0%	3	17.6%	3	17.6%	0	0.0%
Larsen Bay	35	8	22.9%	4	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	25.0%	1	12.5%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	106	48.0%	35	15.8%	26	11.8%	1	0.5%	9	4.1%	1	0.5%	14	6.3%	18	8.1%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-4. Household Assessment of Change in Fish Other than Salmon Uses Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No	Pctg	No	Pctg
Tatitlek	17	1	≤.9%	2	1.8%	1	5.9%	13	76.5%	5	38.5%	2	15.4%	6	46.2%
Chenega Bay	18	0	○.0%	1	5.6%	1	5.6%	16	88.9%	4	25.0%	4	25.0%	8	50.0%
Nanwalek	35	4	1.4%	0	0.0%	0	0.0%	31	88.6%	16	51.6%	12	38.7%	3	9.7%
Port Graham	46	3	6.5%	0	0.0%	1	2.2%	42	91.3%	16	38.1%	12	28.6%	4	33.3%
Ouzinkie	53	3	5.7%	2	3.8%	3	5.7%	45	84.9%	19	42.2%	23	51.1%	3	6.7%
Larsen Bay	35	0	0.0%	3	8.6%	2	5.7%	30	85.7%	11	36.7%	12	40.0%	7	23.3%
Karluk	17	0	0.0%	2	1.8%	1	5.9%	14	82.4%	4	28.6%	6	42.9%	4	28.6%
TOTAL	221	1	5.0%	10	4.5%	9	4.1%	191	86.4%	75	39.3%	71	37.1%	5	26.4%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-5. Reasons for Increased Harvest/Use of Fish Other Than Salmon Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	1	2.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Port Graham	46	1	2.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Ouzinkie	53	1	1.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Larsen Bay	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	3	1.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.9%	1	0.5%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-6. Reasons for Decreased Harvest/Use of Fish Other Than Salmon Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	12	70.6%	4	33.3%	5	41.7%	1	8.3%	1	8.3%	0	0.0%	2	16.7%	6	50.0%	0	0.0%
Chenega Bay	18	15	83.3%	9	60.0%	5	33.3%	1	6.7%	1	6.7%	0	0.0%	4	26.7%	7	46.7%	0	0.0%
Nanwalek	35	14	40.0%	3	21.4%	3	21.4%	0	0.0%	1	7.1%	0	0.0%	0	0.0%	2	14.3%	0	0.0%
Port Graham	46	32	69.6%	6	18.8%	5	15.6%	1	3.1%	3	9.4%	1	3.1%	3	9.4%	8	25.0%	1	3.1%
Ouzinkie	53	8	15.1%	1	12.5%	0	0.0%	0	0.0%	2	25.0%	0	0.0%	1	12.5%	3	37.5%	0	0.0%
Larsen Bay	35	3	8.6%	1	33.3%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Karluk	17	3	17.6%	0	0.0%	2	66.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
TOTAL	221	87	39.4%	24	10.9%	21	9.5%	3	1.4%	8	3.6%	1	0.5%	10	4.5%	28	12.7%	1	0.5%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-7. Household Assessment of Change in Large Land Mammal Uses Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	1	5.9%	2	11.8%	0	0.0%	14	82.4%	0	0.0%	4	28.6%	10	71.4%
Chenega Bay	18	0	0.0%	1	5.6%	1	5.6%	16	88.9%	4	25.0%	3	18.8%	9	56.3%
Nanwalek	35	3	8.6%	0	0.0%	4	11.4%	28	80.0%	5	17.9%	16	57.1%	7	25.0%
Port Graham	46	0	0.0%	0	0.0%	18	39.1%	28	60.9%	5	17.9%	19	67.9%	4	14.3%
Ouzinkie	53	3	5.7%	2	3.8%	7	13.2%	41	77.4%	13	31.7%	12	29.3%	16	39.0%
Larsen Bay	35	0	0.0%	3	8.6%	2	5.7%	30	85.7%	11	36.7%	9	30.0%	10	33.3%
Karluk	17	0	0.0%	2	11.8%	1	5.9%	14	82.4%	1	7.1%	4	28.6%	9	64.3%
TOTAL	221	7	3.2%	10	4.5%	33	14.9%	171	77.4%	39	17.6%	67	30.3%	65	29.4%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-8. Reasons for Increased Harvest/Use of Large Land Mammals Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	1	5.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	1	2.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Ouzinkie	53	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Larsen Bay	35	1	2.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	3	1.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.9%	0	0.0%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-9. Reasons for Decreased Harvest/Use of Large Land Mammals Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No	Pctg.
Tatitlek	17	12	70.6%	2	16.7%	7	58.3%	3	25.0%	1	8.3%	0	0.0%	2	16.7%	2	16.7%	0	0.0%
Chenega Bay	18	13	72.2%	8	61.5%	6	46.2%	2	15.4%	2	15.4%	0	0.0%	3	23.1%	8	61.5%	0	0.0%
Nanwalek	35	7	20.0%	1	14.3%	1	14.3%	1	14.3%	0	0.0%	0	0.0%	1	14.3%	1	14.3%	0	0.0%
Port Graham	46	11	23.9%	0	0.0%	0	0.0%	0	0.0%	1	9.1%	0	0.0%	2	18.2%	3	27.3%	0	0.0%
Ouzinkie	53	18	34.0%	1	5.6%	4	22.2%	1	5.6%	1	5.6%	1	5.6%	3	16.7%	6	33.3%	0	0.0%
Larsen Bay	35	9	25.7%	1	11.1%	2	22.2%	1	11.1%	0	0.0%	1	11.1%	0	0.0%	4	44.4%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	70	31.7%	13	5.9%	20	9.0%	8	3.6%	5	2.3%	2	0.9%	1	5.0%	24	10.9%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-10. Household Assessments of Change in Small Land Mammal/Furbearer Uses Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	1	5.9%	2	11.8%	12	70.6%	2	11.8%	1	50.0%	0	0.0%	1	50.0%
Chenega Bay	18	0	0.0%	1	5.6%	11	61.1%	6	33.3%	0	0.0%	4	66.7%	2	33.3%
Nanwalek	35	0	0.0%	0	0.0%	33	94.3%	2	5.7%	0	0.0%	2	100.0%	0	0.0%
Port Graham	46	1	2.2%	0	0.0%	44	95.7%	1	2.2%	0	0.0%	1	100.0%	0	0.0%
Ouzinkie	53	4	7.5%	2	3.8%	37	69.8%	10	18.9%	2	20.0%	5	50.0%	3	30.0%
Larsen Bay	35	0	0.0%	3	8.6%	26	74.3%	6	17.1%	1	16.7%	4	66.7%	1	16.7%
Karluk	17	0	0.0%	2	11.8%	10	58.8%	5	29.4%	1	20.0%	2	40.0%	2	40.0%
TOTAL	221	6	2.7%	10	4.5%	173	78.3%	32	14.5%	5	2.3%	18	8.1%	9	4.1%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-11. Reasons for Increased Harvest/Use of Small Land Mammals/Furbearers Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ouzinkie	53	1	1.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Larsen Bay	35	1	2.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Karluk	17	1	5.9%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	3	1.4%	0	0.0%	1	0.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.9%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-12. Reasons for Decreased Harvest/Use of Small Land Mammals/Furbearers Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	2	11.8%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Chenega Bay	18	3	16.7%	0	0.0%	2	66.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	66.7%	0	0.0%
Nanwalek	35	1	2.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ouzinkie	53	3	5.7%	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%	3	100.0%	0	0.0%
Larsen Bay	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Karluk	17	1	5.9%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	10	4.5%	0	0.0%	5	2.3%	0	0.0%	1	0.5%	0	0.0%	0	0.0%	6	2.7%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-13. Household Assessments of Change in Marine Mammal Uses Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	2	11.8%	0	0.0%	15	88.2%	2	13.3%	4	26.7%	9	60.0%
Chenega Bay	18	0	0.0%	1	5.6%	0	0.0%	17	94.4%	1	5.9%	6	35.3%	10	58.8%
Nanwalek	35	1	2.9%	0	0.0%	3	8.6%	31	88.6%	6	19.4%	16	51.6%	9	29.0%
Port Graham	46	1	2.2%	0	0.0%	9	19.6%	36	78.3%	7	19.4%	16	44.4%	13	36.1%
Ouzinkie	53	2	3.8%	2	3.8%	33	62.3%	16	30.2%	3	18.8%	10	62.5%	3	18.8%
Larsen Bay	35	0	0.0%	3	8.6%	14	40.0%	18	51.4%	5	27.8%	5	27.8%	8	44.4%
Karluk	17	0	0.0%	2	11.8%	4	23.5%	11	64.7%	1	9.1%	4	36.4%	6	54.5%
TOTAL	221	4	1.8%	10	4.5%	63	28.5%	144	65.2%	25	11.3%	61	27.6%	58	26.2%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-14. Reasons for Increased Harvest/Use of Marine Mammals Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General erest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	o.	Pctg.		Pctg.	o.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ouzinkie	53	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Larsen Bay	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-15. Reasons for Decreased Harvest/Use of Marine Mammals Compared he Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses No.	Responses Pctg.	Resource Condition: Food Safety No.	Resource Condition: Food Safety Pctg.	Resource Abundance No.	Resource Abundance Pctg.	Access No.	Access Pctg.	Time Constraints No.	Time Constraints Pctg.	[illegible] of Individuals No.	[illegible] of Individuals Pctg.	[illegible] Conditions No.	[illegible] Conditions Pctg.	[illegible] Interest/Effort No	[illegible] Interest/Effort Pctg.	Access/ Luck No.	Access/ Luck Pctg.
Tatitlek	17	13	76.5%	4	30.8%	10	76.9%	0	0.0%	0	0.0%	0	0.0%	2	15.4%	3	23.1%	0	0.0%
Chenega Bay	18	14	77.8%	6	42.9%	7	50.0%	1	7.1%	1	7.1%	0	0.0%	6	42.9%	2	14.3%	0	0.0%
Nanwalek	35	17	48.6%	0	0.0%	6	35.3%	1	5.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	29	63.0%	4	13.8%	6	20.7%	0	0.0%	1	3.4%	0	0.0%	3	10.3%	1	3.4%	2	6.9%
Ouzinkie	53	4	7.5%	0	0.0%	4	100.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%	0	0.0%
Larsen Bay	35	6	17.1%	0	0.0%	1	16.7%	1	16.7%	0	0.0%	0	0.0%	3	50.0%	1	16.7%	0	0.0%
Karluk	17	1	5.9%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	84	38.0%	14	6.3%	35	15.8%	3	1.4%	2	0.9%	0	0.0%	15	6.8%	7	3.2%	2	0.9%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-16. Household Assessments of Change in Uses of Birds and Eggs Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg	No.	Pctg	No.	Pctg.
Tatitlek	17	0	0.0%	2	11.8%	0	0.0%	15	88.2%	1	6.7%	2	13.3%	12	80.0%
Chenega Bay	18	0	0.0%	1	5.6%	5	27.8%	12	66.7%	0	0.0%	6	50.0%	6	50.0%
Nanwalek	35	0	0.0%	0	0.0%	9	25.7%	26	74.3%	9	34.6%	1	42.3%	6	23.1%
Port Graham	46	1	2.2%	0	0.0%	20	43.5%	25	54.3%	9	36.0%	8	32.0%	8	32.0%
Ouzinkie	53	1	1.9%	2	3.8%	7	13.2%	43	81.1%	16	37.2%	24	55.8%	3	7.0%
Larsen Bay	35	0	0.0%	3	8.6%	8	22.9%	24	68.6%	10	41.7%	≤	25.0%	8	33.3%
Karluk	17	0	0.0%	2	11.8%	2	11.8%	13	76.5%	0	0.0%	10	76.9%	3	23.1%
TOTAL	221	2	0.9%	10	4.5%	51	23.1%	158	71.5%	45	20.4%	67	30.3%	46	20.8%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-17. Reasons for Increased Harvest/Use of Birds and Eggs Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	1	2.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Port Graham	46	1	2.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%
Ouzinkie	53	1	1.9%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Larsen Bay	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	3	1.4%	1	0.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.5%	1	0.5%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-18. Reasons for Decreased Harvest/Use of Birds and Eggs Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	13	76.5%	3	23.1%	10	76.9%	1	7.7%	1	7.7%	0	0.0%	3	23.1%	2	15.4%	0	0.0%
Chenega Bay	18	11	61.1%	1	9.1%	3	27.3%	1	9.1%	1	9.1%	0	0.0%	4	36.4%	1	9.1%	0	0.0%
Nanwalek	35	12	34.3%	0	0.0%	4	33.3%	0	0.0%	1	8.3%	0	0.0%	1	8.3%	0	0.0%	0	0.0%
Port Graham	46	17	37.0%	1	5.9%	4	23.5%	1	5.9%	1	5.9%	0	0.0%	1	5.9%	5	29.4%	1	5.9%
Ouzinkie	53	10	18.9%	0	0.0%	4	40.0%	0	0.0%	0	0.0%	0	0.0%	1	10.0%	1	10.0%	0	0.0%
Larsen Bay	35	8	22.9%	1	2.5%	1	12.5%	0	0.0%	0	0.0%	1	12.5%	2	25.0%	4	50.0%	0	0.0%
Karluk	17	1	5.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
TOTAL	221	72	32.6%	6	2.7%	26	11.8%	3	1.4%	4	1.8%	1	0.5%	12	5.4%	14	6.3%	1	0.5%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-19. Household Assessments of Change in Uses of Marine Invertebrates Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	2	11.8%	0	0.0%	15	88.2%	2	13.3%	3	20.0%	10	66.7%
Chenega Bay	18	0	0.0%	1	5.6%	0	0.0%	17	94.4%	1	5.9%	10	58.8%	6	35.3%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	35	100.0%	18	51.4%	8	22.9%	9	25.7%
Port Graham	46	1	2.2%	0	0.0%	0	0.0%	45	97.8%	20	44.4%	9	20.0%	16	35.6%
Ouzinkie	53	2	3.8%	2	3.8%	1	1.9%	48	90.6%	30	62.5%	15	31.3%	3	6.3%
Larsen Bay	35	0	0.0%	3	8.6%	0	0.0%	32	91.4%	7	3.1%	12	37.5%	3	9.4%
Karluk	17	1	5.9%	2	11.8%	3	17.6%	11	64.7%	3	7.3%	8	72.7%	0	0.0%
TOTAL	221	4	1.8%	10	4.5%	4	1.8%	203	91.9%	1	1.2%	65	29.4%	47	21.3%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did in the in g the parison year.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-20. Reasons for Increased Harvest/Use of Marine Invertebrates Compared to the Previous Year (1989) 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nanwalek	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ouzinkie	53	1	1.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Larsen Bay	35	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	1	0.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.5%	0	0.0%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-21. Reasons for Decreased Harvest/Use of Marine Invertebrates Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses No.	Responses Pctg.	Resource Condition/ Food Safety No.	Resource Condition/ Food Safety Pctg.	Resource Abundance No.	Resource Abundance Pctg.	Access No.	Access Pctg.	Time Constraints No.	Time Constraints Pctg.	Heath/Age of Individuals No.	Heath/Age of Individuals Pctg.	Economic Conditions No.	Economic Conditions Pctg.	General Interest/Effort No.	General Interest/Effort Pctg.	Success/ Luck No.	Success/ Luck Pctg.
Tatitlek	17	15	88.2%	2	13.3%	10	66.7%	0	0.0%	1	6.7%	0	0.0%	1	6.7%	2	13.3%	0	0.0%
Chenega Bay	18	16	88.9%	7	43.8%	3	18.8%	0	0.0%	1	6.3%	0	0.0%	2	12.5%	4	25.0%	0	0.0%
Nanwalek	35	12	34.3%	5	41.7%	6	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	43	93.5%	17	39.5%	13	30.2%	2	4.7%	2	4.7%	0	0.0%	1	2.3%	4	9.3%	0	0.0%
Ouzinkie	53	18	34.0%	13	72.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	11.1%	0	0.0%
Larsen Bay	35	5	14.3%	3	60.0%	1	20.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%	2	40.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	109	49.3%	47	21.3%	33	14.9%	3	1.4%	4	1.8%	0	0.0%	4	1.8%	14	6.3%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-22. Household Assessments of Change in Uses of Wild Plants Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	No Response		Not in Community		No Previous Use		Valid Responses		More		Same		Less	
		No.	Pctg	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	4	23.5%	2	11.8%	0	0.0%	11	64.7%	0	0.0%	10	90.9%	1	9.1%
Chenega Bay	18	0	0.0%	1	5.6%	1	5.6%	16	88.9%	2	12.5%	8	50.0%	6	37.5%
Nanwalek	35	1	2.9%	0	0.0%	0	0.0%	34	97.1%	17	50.0%	11	32.4%	6	17.6%
Port Graham	46	4	8.7%	0	0.0%	3	6.5%	39	84.8%	14	35.9%	14	35.9%	11	28.2%
Ouzinkie	53	4	7.5%	2	3.8%	1	1.9%	46	86.8%	29	63.0%	16	34.8%	1	2.2%
Larsen Bay	35	1	2.9%	3	8.6%	1	2.9%	30	85.7%	11	36.7%	13	43.3%	6	20.0%
Karluk	17	0	0.0%	2	11.8%	0	0.0%	15	88.2%	5	33.3%	9	60.0%	1	6.7%
TOTAL	221	14	6.3%	10	4.5%	6	2.7%	191	86.4%	78	35.3%	81	36.7%	32	14.5%

Note: 'No Response' includes those who responded 'Don't Know.' 'Not in Community' includes those who did not live in the community during the comparison year.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.

Table J-23. Reasons for Increased Harvest/Use of Wild Plants Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Health/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	1	5.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Nanwalek	35	4	11.4%	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%	2	50.0%	0	0.0%
Port Graham	46	1	2.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	100.0%	0	0.0%
Ouzinkie	53	9	17.0%	0	0.0%	8	88.9%	1	11.1%	0	0.0%	1	11.1%	0	0.0%	0	0.0%	0	0.0%
Larsen Bay	35	1	2.9%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Karluk	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
TOTAL	221	16	7.2%	1	0.5%	9	4.1%	1	0.5%	0	0.0%	1	0.5%	2	0.9%	4	1.8%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1990

Table J-24. Reasons for Decreased Harvest/Use of Wild Plants Compared to the Previous Year (1989), 1990 Study Year

Community	Households Surveyed	Responses		Resource Condition/ Food Safety		Resource Abundance		Access		Time Constraints		Heath/Age of Individuals		Economic Conditions		General Interest/Effort		Success/ Luck	
		No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.	No.	Pctg.
Tatitlek	17	1	5.9%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chenega Bay	18	6	33.3%	2	33.3%	1	16.7%	0	0.0%	5	83.3%	0	0.0%	0	0.0%	3	50.0%	0	0.0%
Nanwalek	35	6	17.1%	0	0.0%	2	33.3%	1	16.7%	1	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Port Graham	46	21	45.7%	6	28.6%	7	33.3%	0	0.0%	2	9.5%	0	0.0%	2	9.5%	5	23.8%	0	0.0%
Ouzinkie	53	4	7.5%	0	0.0%	2	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Larsen Bay	35	4	11.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	100.0%	0	0.0%
Karluk	17	1	5.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
TOTAL	221	43	19.5%	8	3.6%	13	5.9%	1	0.5%	8	3.6%	0	0.0%	2	0.9%	13	5.9%	0	0.0%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1991.